

RAILWAY

TRACK *and* STRUCTURES

A Simmons-Boardman TIME-SAVER Publication

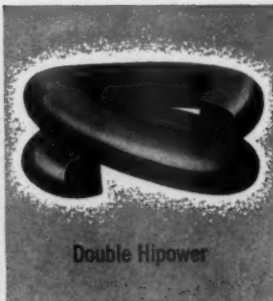
Maintenance Cost Reduction —on Schedule!



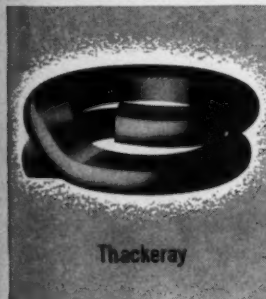
Super Hipower



Improved Hipower



Double Hipower



Thackeray

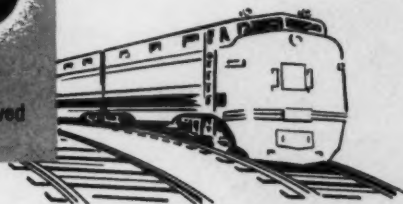


Super Collar Grooved



National Collar Grooved

Any one of these six service-proven railway spring washers, typical of the complete NATIONAL line, can reduce maintenance costs. Powerful NATIONAL Spring Washers, with built-in reserve power, absorb shocks and maintain constant tension...
keep bolts tighter, longer!



A Complete Line of Railway Spring Washers

NATIONAL spring washers are used extensively by many railroads—along thousands of miles of track—on frogs and crossings throughout the world.

**The NATIONAL
LOCK WASHER COMPANY**

Serving Industry Since 1886

NEWARK 5, NEW JERSEY, U. S. A.



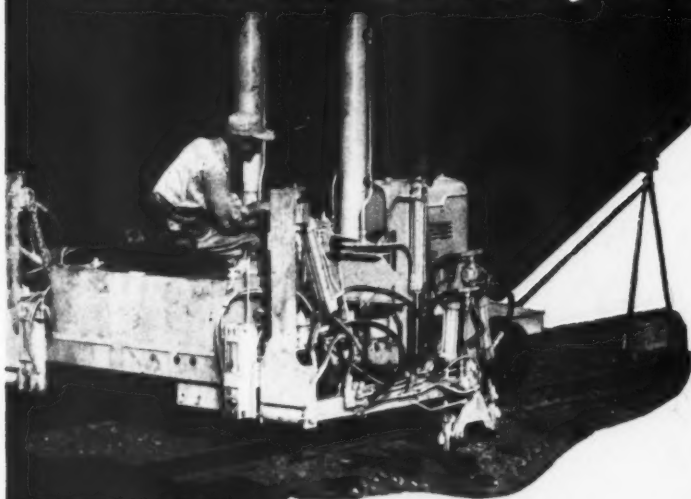
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SUPER JACK-ALL

KERSHAW JACK-ALLS



STANDARD JACK-ALL

Now Kershaw presents two great new 1959 model Jack-Alls, fully tested and proven, to give you maximum production and maximum quality in your track maintenance operations. Both have many exclusive features found in no other jack-tamper.

● The Kershaw Super Jack-All is designed for high production and light raises ahead of tampers. The Kershaw Standard Jack-All, designed for maximum raises, as introduced in 1954 and is the first jack-tamper ever offered on the market. It is ideal for heavy ballasting programs or raising ahead of timbering gangs. ● And either Kershaw Jack-All may be used with ANY surfacing device. Put both of these great Kershaw Jack-Alls in your 1959 budget now!

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- ★ Tamps on sides of ties.
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- ★ Tamping heads move on vertical guide.
- ★ Effectively tamps dirt, cinders, chats, slag, stone, pit-run gravel or any other type ballast.
- ★ Special tamping feet provided for various types ballast and various raises.
- ★ Track is jacked inside rail and tamped outside.

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MONTGOMERY



ALABAMA



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Now you can have positive protection against wheel-climbing, derailments, and the "picking" and cutting of switch points. Bethlehem's new Switch Point Guard Rail, Model 755, was designed expressly for use at switch points. And what a whale of a job it does!

It works on the same principle as the self-guarded frog. As shown in the photograph, the head of the Model 755 stands higher than the head of the stock rail. When wheels pass through the guarded area, the guard rail holds the wheel flanges

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This, of course, is rugged duty so the Model 755 is heat-treated to provide the extra toughness needed. When the guard does finally become worn after long and heavy use, it can be replaced independently of slide plates, filler blocks and braces, at low cost.

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A Bethlehem representative will be glad to give you facts and figures to show how quickly the Model 755 pays for itself. Just write to the address below and we'll arrange a get-together at your convenience.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

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BETHLEHEM STEEL



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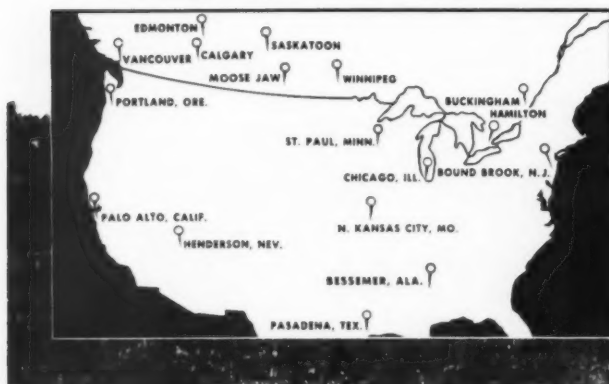
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RAILWAY

TRACK and STRUCTURES

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RAILWAY TRACK and STRUCTURES

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Vol. 54, no. 11

NOVEMBER, 1958

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DON'T MISS . . .

Paul Bunyan had nothing on the EJ&E. When faced recently with a large yard-rearrangement project, the road devised a huge car-

riage, dubbed the "monster," capable of picking up and transporting a completely assembled turnout, including ties.

. . . in the December issue

Dear reader:

Recognition for the supervisor

Much has been written and spoken about the importance of the maintenance-of-way supervisor. In speeches, in articles and in private conversations, representatives of railroad management have repeatedly praised the loyalty and industry of their roadmasters, track supervisors, bridge & building supervisors and others of similar position. In these comments the supervisory officer has frequently been referred to as a part of the management team.

Truer words were never spoken. Ever since the railroads came into existence the supervisor has been a tower of strength. He has to be because of his direct responsibility for the condition and safety of the tracks or structures in his territory. Since trains are running over his district during the night, as well as in the daytime, he has to be available, or on call, 24 hr a day. Literally speaking, his life isn't his own.

There's something else that adds to the stature of the supervisor. That is the fact that he is directly responsible for activities involving the expenditure of large sums of his employer's money. Obviously, therefore, if he is to do his job successfully, he must have a high degree of administrative ability. And it almost goes without saying that he must have an enormous fund of specialized technical knowledge and ability, as well as the adaptability required to accept and apply new developments in his field.

The passage of time has not lessened the burdens of the M/W supervisor. If anything, they have become heavier. The forty-hour week, for example, brought an entirely new crop of problems. And because of higher wages he is under greater pressure than ever before to institute cost-saving practices. He must, in short, be a hard-working, high-caliber business man with technical and administrative ability, excellent judgment, imagination and foresight.

Which brings us back to the statements of management personnel about the importance of the maintenance-of-way supervisor. It is evident from these statements that management in general has an appreciation of the contributions that the supervisor is required to make in the interests of his railroad. But, even so, this question seems very much in order: What specific steps has management taken to put its words into action? In other words, what has been done to make the supervisor feel that he is a part of management? He has the responsibilities, now what about the recognition?

It is true that some roads have taken concrete steps toward this end. Some, for example, hold periodical staff meetings for their supervisors, at which, among other things, management policy is reviewed and explained. Others should follow this example. Some roads actively encourage their supervisors to take part in the work of such groups as the AREA and the Roadmasters' and Bridge & Building associations. More railroads should put this policy into effect. These are only two of many steps that could be taken.

The loyalty of the M/W supervisor is a priceless asset of the railroads. It is not enough for management to voice appreciation of that asset. Concrete steps should be taken to protect and preserve it.

MHD



1928
1958

***3,407,507**

MILES OF RAIL IN TRACK TESTED

***1,635,945**

DEFECTIVE RAILS REMOVED
FROM TRACK

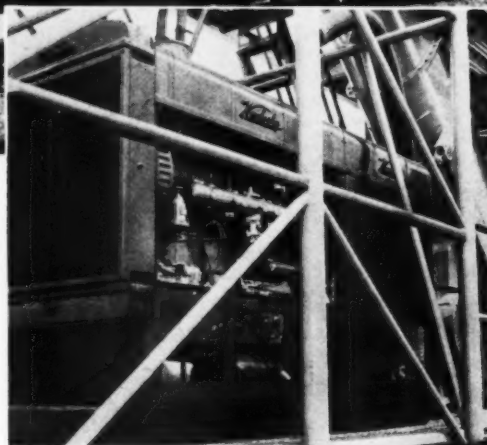


*Division of
Sperry Products, Inc.
Danbury, Connecticut*

*Compiled as of
September 30, 1958



WAUKESHA **ENGINEATOR[®] powers** **Car Icing Machine Unit**



Moving on a track alongside refrigerated car trains . . . no icing platform needed . . . this mobile icing machine unit ices cars on either side. So flexible is its extending or retracting snout, that four hatches of adjacent ends of two cars can be iced from one position. With four men, a train is iced at two minutes per car.

This Waukesha-Engineator-powered mobile unit is speeding the icing of the Pacific Fruit Express Co. cars at Eugene, Oregon. Its head-end 4-wheel tractor carries the power plant and icing machinery; and the four 4-wheel trailers

haul a total of 60 tons of ice in 300 lb. blocks.

On the tractor is a Waukesha 100 KW Engineator (a gasoline engine operating at 1800 rpm direct-connected to a 240/480 AC 3-phase 60-cycle generator). It powers controls (in cab on snout), ice breaker and elevator delivering ice to snout, also chain elevator (through trailers) which feeds ice to breaker. Breaker makes coarse or fine ice, which is salted at the top platform. Waukesha Engineators for gas, gasoline or Diesel fuels are available in 50 to 800 KW capacities. Send for descriptive bulletins.

392

RAILWAY DIVISION WAUKESHA MOTOR COMPANY • WAUKESHA, WISCONSIN

announcing



AN IMPORTANT NEW
DEVELOPMENT IN
CRANE POWER

THE
*Hydra***orton**
diesel hydraulic
L O C O M O T I V E C R A N E

See Orton's advertisement next month for details of this completely revolutionary engineering achievement. See *really* low maintenance, elimination of open gearing, and many more remarkable design and engineering features.

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608 S. Dearborn Street
CHICAGO 5, ILLINOIS

THE MOST POWERFUL NAME IN CRANES

BURLINGTON—E. W. Gibson, office engineer, has been appointed engineer of capital expenditures at Chicago, succeeding H. G. Porter, retired. Charles A. Christensen, division engineer at Denver, Colo., has been appointed to the newly created position of engineer of public works with headquarters at Chicago.

CANADIAN NATIONAL—R. T. Puddester, regional engineer, maintenance of way, Moncton, N. B., has been promoted to chief engineer, Atlantic region, with the same headquarters, succeeding D. W. Blair, promoted to general superintendent, Maritime district. J. J. Pomor, assistant division engineer at Winnipeg, Man., has been promoted to division engineer at The Pas, Man.

CENTRAL OF GEORGIA—J. S. Pritchett, foreman of bridges and building, has been promoted to assistant supervisor of bridges and buildings, with headquarters at Columbus, Ga.

CHESAPEAKE & OHIO—R. H. Reid has been promoted to assistant supervisor bridges and buildings at Clifton Forge, Va., succeeding O. P. Nicely who has been advanced to supervisor bridges and buildings at the same location. Mr. Nicely succeeds E. B. Jones who has been appointed general foreman, system bridge forces, succeeding R. H. Roberts, retired.

ERIE—Charles S. Bray, track supervisor at East Buffalo, N. Y., has been transferred to Dunmore, Pa., on the Wyoming division, succeeding Burns R. Perfect, retired. Anthony P. Buono has been appointed track supervisor, Subdivision No. 1, Buffalo division, with headquarters at Buffalo, N. Y. Jesse H. Smith has been appointed general foreman, Buffalo division, with headquarters at Buffalo, N. Y. George T. Fleming, has been named general foreman, New York and Terminal divisions, with headquarters at Jersey City, N. J. William S. Moza has been appointed master carpenter, Delaware, Susquehanna, Tioga & Wyoming divisions, with headquarters at Hornell, N. Y., succeeding Milton H. Ferry, retired. George Jess has been appointed assistant master carpenter, Mahoning division, with headquarters at Youngstown, Ohio. Fred Williams has been appointed general foreman, Wyoming division, with headquarters in Dunmore, Pa.

GRAND TRUNK WESTERN—R. G. Maughan, assistant to chief engineer, has been promoted to assistant chief engineer, with headquarters at Detroit, succeeding A. T. Powell, retired. The position of assistant to chief engineer has been abolished.

PENNSYLVANIA—These recent appointments have occurred: E. M. Bissinger, supervisor track, Steubenville, Ohio, to assistant district engineer, Philadelphia, succeeding J. H. Burdakin, promoted to assistant train master, Louisville, Ky.

J. B. Hartranft to supervisor of track, Steubenville; R. A. Shaw to assistant engineer in office of assistant chief engineer-staff, Altoona, Pa.; G. W. Brown to supervisor of track, Williamsport, Pa.; G. H. Way, Jr. to supervisor track, Ernest, Pa.; C. E. Pitzer to supervisor track, Woodbury, N. J.; E. J. Hall to assistant supervisor track, Perryville, Md.; D. C. Snyder to assistant supervisor track, Enola, Pa.; F. J. Meccariello to general foreman track, Philadelphia.

D. E. Pergrin, district engineer, Columbus, Ohio, to regional engineer, Indianapolis, Ind., succeeding W. W. Boyer, retired; R. H. Smith to district engineer, Columbus; D. A. Sempson to district engineer, Chicago; R. E. Gorsuch to assistant engineer, Philadelphia; L. E. Ward to supervisor methods and cost control, Philadelphia; N. J. Padula to supervisor track, South Chicago, Ind.; H. A. Siravo to supervisor track, Homestead, Pa.; E. Ruggiero to assistant supervisor track, Philadelphia.

L. A. Pelton to district engineer, Harrisburg, Pa., succeeding R. A. Westergren, resigned; T. C. Netherton to district engineer, Fort Wayne, Ind.; W. B. Knight to district engineer, Harrington, Del.; C. W. Owens to assistant district engineer, Baltimore, Md.; R. P. Howell to assistant district engineer, Harrisburg, Pa.; N. L. Hoachlander to supervisor track, Canton, Ohio; A. V. Levergood to supervisor track, Harrisburg, Pa.; W. C. Weltach to supervisor track, Valparaiso, Ind.; H. Gessner, to supervisor track, Dunkirk, N. Y.; G. F. Horn to assistant supervisor track, Steubenville.

Biographical briefs

Harold W. Jenkins, 53, who was recently promoted to chief engineer of the New Haven at New Haven, Conn. (RT&S, Sept., p. 10), was born in Hudson, Mass., and is a graduate of Boston College in 1927. He entered the service of the New Haven in September 1927 as a chainman at Boston. From 1929 to 1936 he held the positions of rodman, inspector and transitman at Harlem River, N. Y. He was promoted to assistant to bridge and

building supervisor in Providence, R. I., in 1936 and to general B&B foreman at New London, Conn., two years later. In 1939, he was appointed assistant B&B supervisor at Boston and further advanced to B&B supervisor at the same location in 1942. He was promoted to assistant division engineer in 1946 and to division engineer in 1953, both at Boston. He was then appointed assistant to chief engineer and in 1954 was promoted to assistant chief engineer, the position he was holding at the time of his recent promotion to chief engineer.

T. Peter Polson, 67, who recently retired as chief engineer of the New Haven at New Haven, Conn. (RT&S, Sept. p. 10), is a native of Branford, Conn., and graduated from the Sheffield Scientific School, Yale University, in 1913. He entered the service of the New Haven in 1913 as a rodman at Waterbury. He was promoted to assistant engineer in 1919 after serving seven months with the U. S. Army. In 1921 Mr. Polson was promoted to assistant track supervisor at Poughkeepsie, N. Y., and was advanced to track supervisor at Framingham, Mass., in 1922. Six months later he was appointed assistant division engineer at Danbury, Conn., and to division engineer at Boston in 1928. He was promoted to maintenance engineer at Harlem River, N. Y., in 1930. Later he served as office assistant to the engineer maintenance of way at New Haven until being sent to Providence, R. I., as division engineer in 1936. He returned to New Haven in 1939 as engineer of track and was appointed assistant to engineer maintenance of way in 1946 and assistant to chief engineer in 1950. Eight months later he was advanced to engineer maintenance of way and in December 1951 was promoted to chief engineer, the position he held at the time of his recent retirement.

John W. DeMoyer, Jr., who was recently promoted to assistant chief engineer maintenance of the Reading at Philadelphia, Pa. (RT&S, Oct. p. 10), is a native of Pottsville, Pa. He joined the railroad in 1927 as a transitman following his graduation from Lehigh University. After serving in various supervisory capacities at Reading, Pottsville, Tamaqua and West Trenton, N. J., he was promoted to division engineer at Philadelphia in 1950. On August 1, 1954, he was appointed assistant engineer maintenance of way, the position he was holding at the time of his recent promotion.

Foster R. Spofford, who has been appointed chief engineer of the Boston & Maine (RT&S, Oct., p. 10), started his engineering career with the B&M in October 1929 as a structural designer and draftsman. He was promoted in 1937 to assistant supervisor of bridges and buildings,

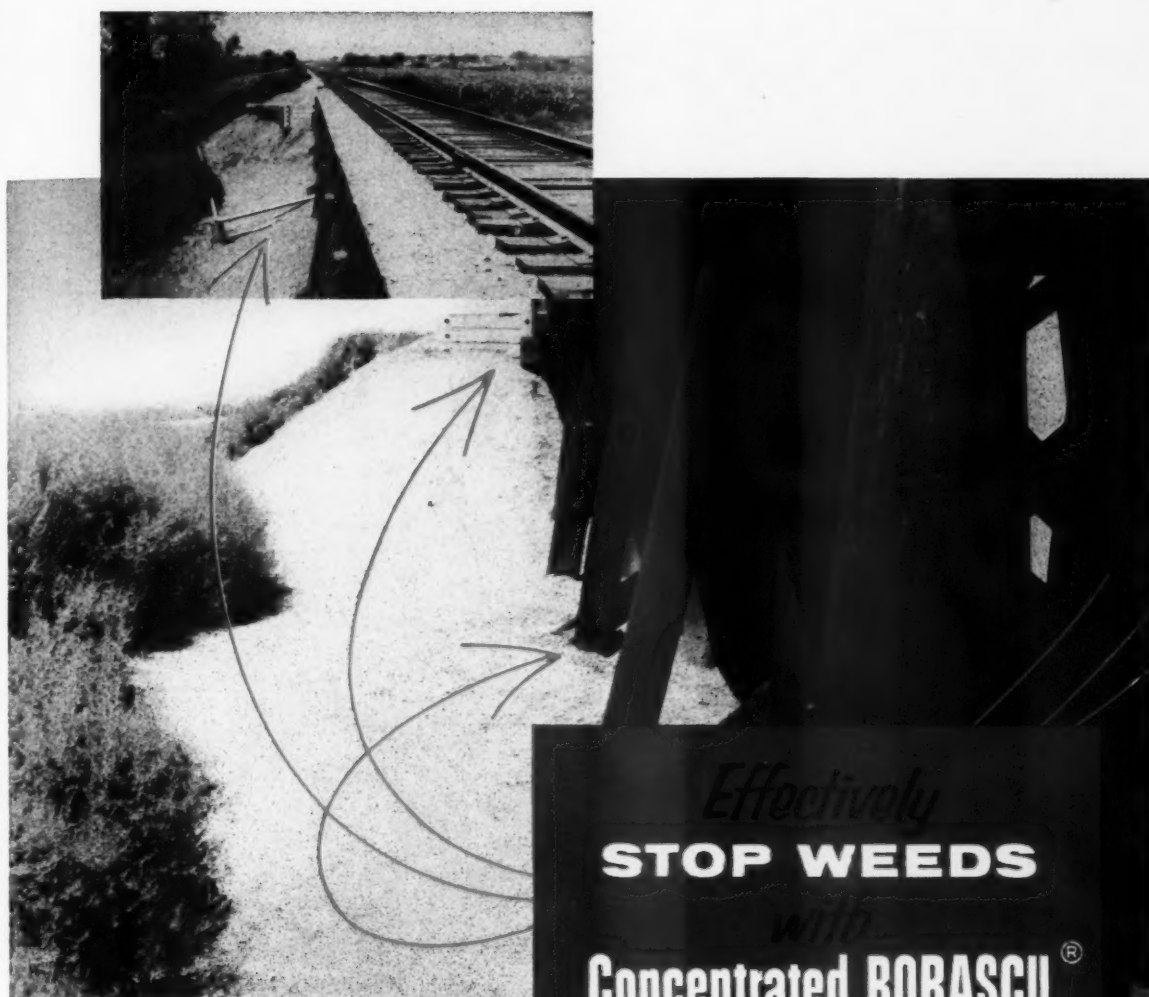
(Continued on page 56)



Harold W. Jenkins
New Haven



T. Peter Polson
New Haven



Effectively
STOP WEEDS
with
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your best defense against weeds on tough terrain!

Protecting your timber structures from the fire hazard of weeds and grasses is simple and safe with Concentrated BORASCU. It kills vegetation and prevents regrowth with carry-over control which can last for a year or longer!

Applying Concentrated BORASCU is easy and inexpensive. Just a man with a pail can treat any type of terrain quickly. This granular borate

material comes to you ready for use. There is nothing to mix—no water to haul!

Roads, big and small, from coast to coast are now using Concentrated BORASCU. They favor it for the safety, economy, effectiveness and convenience it offers. Your 'road, too, can benefit by using Concentrated BORASCU weed killer... write today for descriptive literature.

Check all these features:

- EASY TO APPLY ... AND SAFE
- RESULTS THAT ARE LONG-LASTING
- NONSELECTIVE • NONPOISONOUS
- NON FIRE-HAZARDOUS
- NONCORROSIVE TO FERROUS METALS

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MANUFACTURERS OF FAMOUS "20 MULE TEAM" PACKAGE PRODUCTS





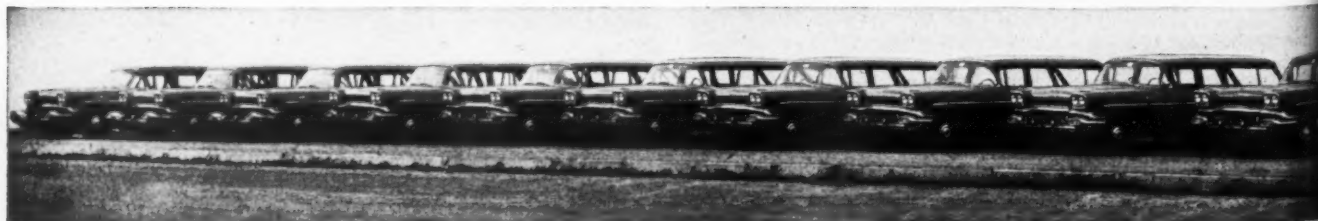
FAIRMONT

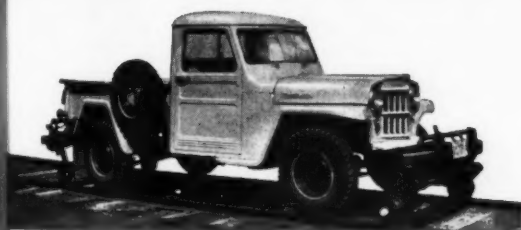
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The Fairmont A34 Hy-Rail is the 8-passenger, combination highway and railway unit that is saving important time for progressive railroads. The flanged guide wheels are heat-treated cast steel with rubber treads for safe, quiet control with complete comfort. When the guide wheels are raised, the car travels over any highway with all the comfort and economy you expect from the new 4-door Pontiac station wagon. When lowered, the wheels

provide reliable, automatic steering with the vibration-free comfort of 4-ply tubeless tires. Because hydraulic power raises and lowers the guide wheels, one man can make the change from highway to track—or back again—at practically any highway crossing in a matter of minutes. We will be happy to demonstrate why an A34 Hy-Rail can save you money while speeding inspections. Why not investigate now?

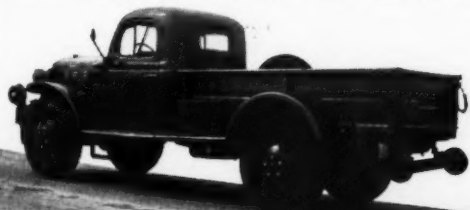
LEADER FOR HALF A CENTURY





A30 SERIES C HY-RAIL CAR is a real timesaver for Track Supervisors and Patrolmen, Signalmen, Linemen, and smaller maintenance crews.

A35 SERIES A HY-RAIL CAR is primarily for maintenance service. Has four-wheel, four-speed drive. Load capacity with pickup box is 3,000 lbs.



Fairmont
RAILWAY MOTORS, INCORPORATED
FAIRMONT, MINNESOTA

Helps from Manufacturers

The following compilation of literature—including pamphlets and data sheets—is offered free to railroad men by manufacturers to the railroad industry. To receive the desired information, write direct to the manufacturer.

EARTHMOVING EQUIPMENT. A 6-page bulletin has been issued explaining the features of the new Caterpillar DW21 (Series D) and DW20 (Series F) wheel tractors. The two-color booklet, Form 33058, illustrates with pictures, charts and a schematic diagram the new air induction system used on these machines. Actual job travel times are cited. A comprehensive explanation of the principles used in the new Torsionflex seat is also included. Brief specifications and a graph show the operating abilities of the No. 456 and No. 470 Lowbowl Scrapers matched to the new wheel tractors. (Write: *Caterpillar Tractor Company, Advertising Division, Dept. RTS, Peoria, Ill.*)

BRUSH KILLERS. A new 12-page booklet is now available entitled "Your Ready-Reference Guide to Dependable Diamond Weed and Brush Killers for Effective, Easy, Economical Weed and Brush Control." The pocket-size, illustrated catalog reviews the producer's line of ready-to-use herbicide formulations. Amine salts, regular esters and low volatile esters of 23 specific products are concisely summarized. Their applications for controlling broad-leaved weeds and clearing brush and woody plants are also cited. (Write: *Diamond Alkali Company, Dept. RTS, 300 Union Commerce Building, Cleveland 14, Ohio.*)

UTILITY TRACTORS. A new booklet now available illustrates and explains the uses of the manufacturer's D-14 and D-17 utility tractors. The booklet, UT-105, shows the versatility of the units operating with the various attachments available. The economic advantages of owning one of the tractors are pointed out. (Write: *Allis-Chalmers Manufacturing Company, Tractor Group, Dept. RTS, Milwaukee 1, Wis.*)

WELDING SUPPLIES. The Airco line of welding supplies and accessories is described and illustrated in a new 52-page catalogue. Form ADC848C covers the complete line of Airco's fluxes and ferrous and non-ferrous rods for gas welding. Also included are accessory items such as protective clothing, goggles, electrode holders, sparklighters, cable, hose, weld cleaning tools, cylinder trucks and many others, for both arc and gas welding. (Write: *Air Reduction Co., Inc., Dept. RTS, 150 East 42nd St., New York 17, N. Y.*)

TRACTORS. A comprehensive discussion of the capabilities of large crawler tractors is given in a new booklet entitled "Increase Power, Production, Profit." Printed in two colors, the 12-page booklet, form D841, points up the uses of the Caterpillar D8 and D9 tractors in construction and railroad applications. Brief specifications are given for both machines. Photographs and drawings emphasize the features of torque converters, oil clutch and constant "live shaft" power for hydraulic and cable controls, steering clutches and brake boosters. (Write: *Caterpillar Tractor Company, Advertising Division, Dept. RTS, Peoria, Ill.*)

PORTABLE POWER SAW. A new book entitled "Easy Steps to Woodcutting with the Wright 'Rebel'," has been published. It is a 16-page book, fully illustrated with photographs and drawings, to show the basic steps in using the power saw in a wide range of woodcutting projects. It is designed for both the professional woodcutter and the amateur. It includes such projects as the construction of a log cabin, a junior log playhouse, making a log retaining wall, a corduroy road, log fences, bridges, piers, rafts and boat docks. It also shows easy steps for felling trees, limbing, and cutting trunks and limbs to desired lengths. Priced at 10 cents. (Write: *Thomas Industries, Inc., Dept. RTS, 410 South Third St., Louisville 2, Ky.*)

MOBILE CRANES. The complete line of Koehring rubber-mounted cranes is presented in a new four-page bulletin. The two-color booklet includes photographs and commentaries on truck cranes with lift capacities of 15, 25, 35 and 45 tons. Conversion for dragline, clamshell or bucket work is pointed out. (Write: *Koehring Division, Dept. RTS, 3226 W. Concordia Ave., Milwaukee 16, Wis.*)



TIE PADS ARE ESSENTIAL — FOR INSURED ECONOMY

As a cost-conscious railroad man, you recommend expenditures *only* for *essential* equipment and materials.

OK. That's sound business sense, particularly in times like these.

We just want to emphasize that tie pads *are* essential materials. Especially when they're Bird Self-Sealing Tie Pads.

Actual in-track experience over the past 20 years has proved conclusively that Bird Self-Sealing Tie

Pads extend the life of new cross ties at least 50%. On older ties which can be adzed down to provide a smooth surface on sound wood, Bird Self-Sealing Tie Pads *double* the remaining life expectancy of the tie.

What can be more essential than this — a proved method of reducing track maintenance costs?

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News notes...

TRACK and STRUCTURES

... a résumé of current events throughout the railroad world

About 87 per cent of all travel in 1957 was by automobile, the remaining 13 per cent by other means of transportation, according to the results of a travel survey made by the Census Bureau. The survey revealed that the civilian population took 231,000,000 trips involving absences from home averaging 5½ days per trip. About 8 million of these trips were made by railroad, more than 7 million by air and almost 6 million by bus.

The Texas & Pacific has joined the Missouri Pacific and the Kansas City Southern in offering a one-fare system for coach and sleeping-car travel. The T&P will honor coach tickets in conventional sleeping cars on the "Westerner," running between Dallas, Tex., and El Paso, and the "Louisiana Eagle" between Ft. Worth and New Orleans. The one-fare system on these trains will be offered as a six-month experiment. Space charges are unchanged. The one-fare arrangement doesn't apply to lightweight Pullman cars carried on the same trains.

A technique for shipping delicate missiles by rail has been developed by the New York Central Technical Research Center in Cleveland. Previously, all such missiles have moved by air because the delicate control mechanisms require absolute protection from shocks en route. The new technique controls shocks by supporting the missile from all sides on rubberized pillows filled with air. Impact tests using a mock missile mounted in a baggage car convinced the railroad that it could transport missiles with no damage to them, according to A. E. Perlman, NYC president. "But what makes us even happier is the fact that we can adapt this handling method to 11 types of sensitive instruments and machinery. The technique promises to open a whole new era for railroading."

Expedited freight schedules for the movement of eastbound perishable traffic went into effect on November 1. The speedup, general among western lines, will cut a day from transit time, provide fifth-morning delivery at Chicago and St. Louis. Western roads inaugurated one day faster westbound freight schedules earlier this year. The goal, eastbound and westbound: to meet trucker competition.

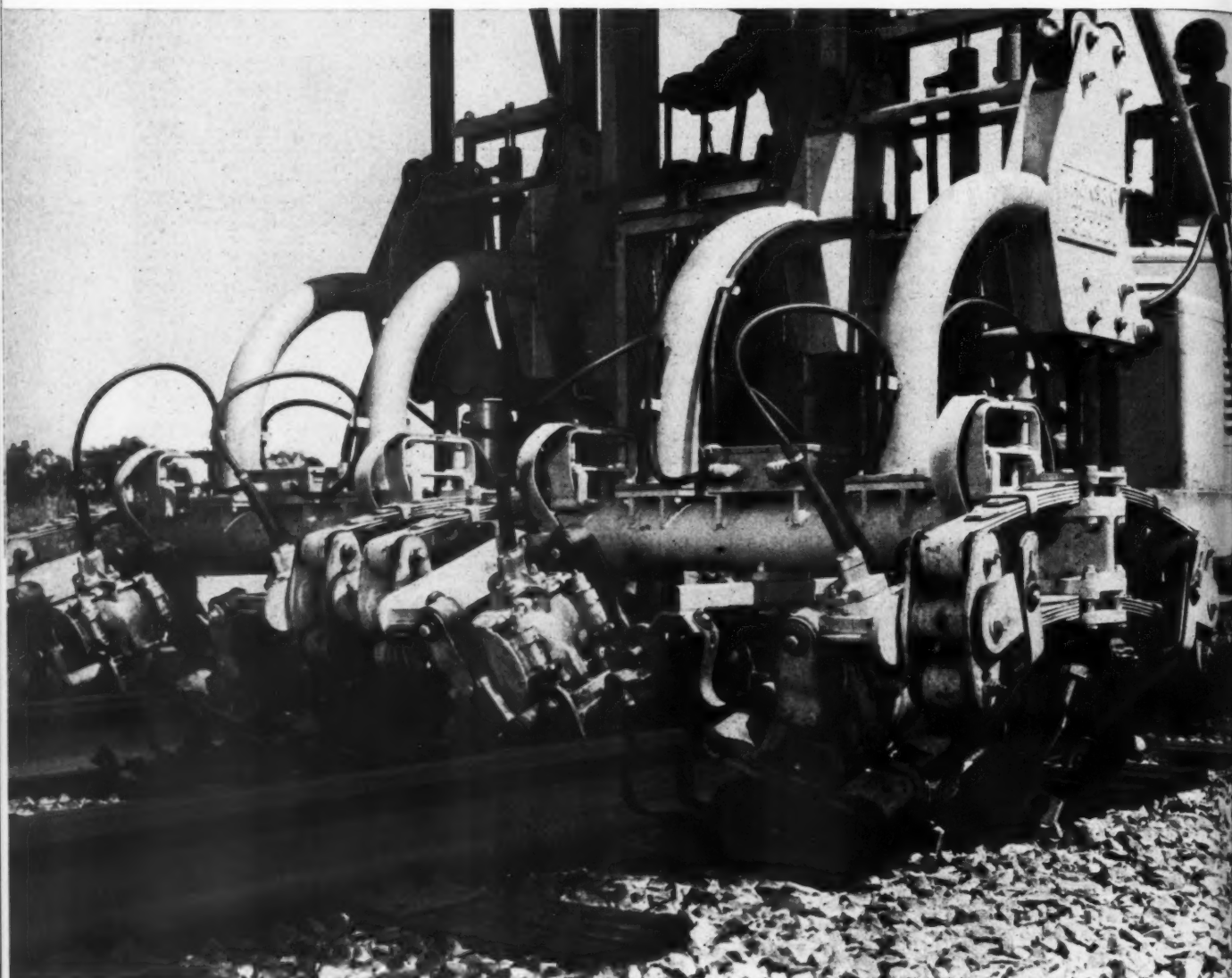
The New Haven is the first railroad to make a positive move toward obtaining a government-guaranteed loan under the terms of the Transportation Act of 1958. The railroad notified the New York Stock Exchange that it planned to call a special stockholders meeting November 21 to seek approval for loans of \$18,542,460. The money requested is earmarked for three projects, the largest of which involves the expenditure of \$16,542,460 for 60 FL-9 dual-power locomotives. Another \$1,500,000 would be used for the capital expenditures involved in centralizing the company's shop facilities at New Haven. The remaining \$500,000 would be used to purchase mechanized maintenance-of-way equipment.

For
1959
The

CHAMP



hits even harder



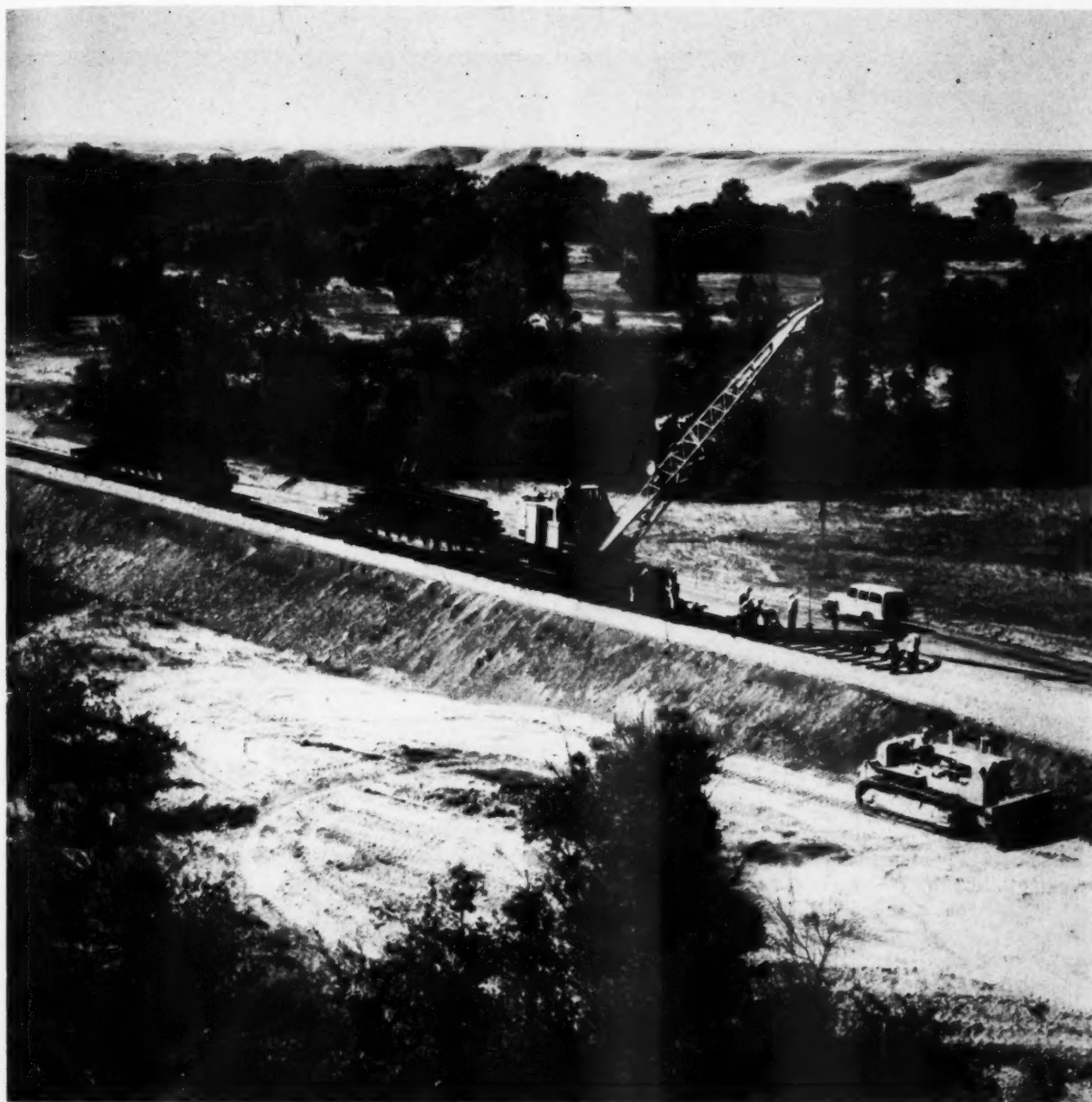
THE JACKSON TRACK MAINTAINER

already judged by the vast majority of Track Chiefs to be the most efficient machine of its type, enters the 1959 spotlight with much more powerful motors operated by a single-generator, simplified power plant with more than ample capacity. Its greatly increased vibratory energy dominantly extends this machine's matchless uniformity of ballast consolidation and supreme versatility over the entire range

of production tamping. Fewer insertions per tie are required with proportionate gains in hourly footage. Maximum ballast consolidation right under the rail is constantly maintained.

Again in '59 the JACKSON TRACK MAINTAINER is by far your best bet. Write, wire or phone for any information desired. Knowing the facts, you'll surely want to include it in your '59 recommendations.

JACKSON VIBRATORS, INC.
LUDINGTON, MICHIGAN

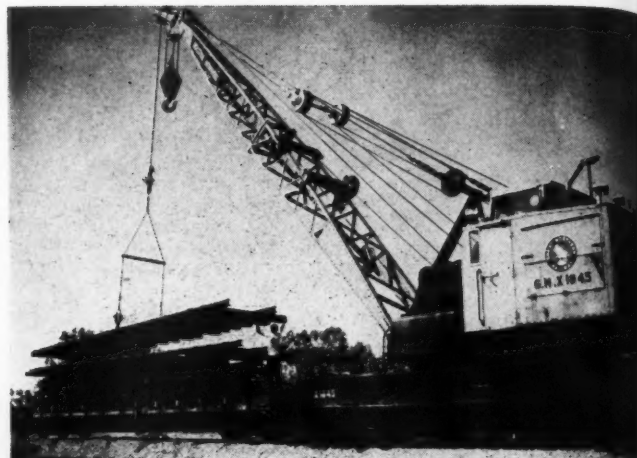


Speed and economy in building 15½-mile branch line on GN result . . .

. . . When track is laid in panels

Because of the urgency of completing the construction of a freight branch line from its main track to a new Air Force base, the GN decided to lay the new track in panels instead of employing conventional track-laying methods. The panel method enabled the road to lay 6,000 ft of track per day.

How the panels were assembled and laid ►



A LOADED CAR is towed behind the locomotive crane of 40 tons capacity to place a panel on the subgrade. It was picked up by two rail tongs suspended from a bridge or spreader bar, then swung 180 deg around crane.

ASSEMBLY of the panels took place at the Glasgow yard. A Bucyrus crawler crane assisted in handling and loading the panels which were assembled one in every 10 min. Each car was loaded with eight panels.

Panels go down fast and empty cars are set

● When the Air Force decided to build a new \$100-million base north of Glasgow, Mont., the Great Northern was called upon to build a new branch line. Speed became the keynote for building this line. A week after the ICC had approved the road's application for the new trackage on July 16, 1958, grading work was begun. On September 19, a little more than two months later, the new branch was completed at a cost of approximately \$1,182,000, including the 225 acres of new right of way.

It's 15½ miles long

The Glasgow Air Force branch is the longest single piece of new line construction on the GN since 1931. It extends northward from the main track at Glasgow 15.5 miles to the southern boundary of the base. Additional trackage on the base, including two spurs and a siding for the contractor, brings the total mileage to 18.36. Other trackage to be built is subject to government requirements.

Speed and economy dictated the decision to use panels rather than to

employ conventional track-laying methods. Inasmuch as the Glasgow Air Force branch line (known colloquially as the Glasgow, Cherry Creek & Northern) will carry freight only, there was no objection to the use of square joints. The Great Northern had laid panel track previously on industry and secondary tracks, but this is the largest undertaking of its kind in recent years.

The ballast work was handled by the grading contractor. About 50,000 cu yd of pit-run gravel were used for the sub-ballast and ballast. This material was secured from local pits and was trucked and spread by the contractor on the finished grade. The sub-ballast was bladed, while the ballast for the cribs and shouldering was windrowed on each side.

The track panels were preassembled at the road's Glasgow yard in 33-ft and 39-ft lengths. Each was complete with ties, rails, tie plates and joint bars, the latter being loosely bolted in pairs to one end.

Second-hand rail was used, ranging from 77½ to 130 lb per yd. The tie plates also were secondhand material. The ties were all oil-treated and a combination of new and

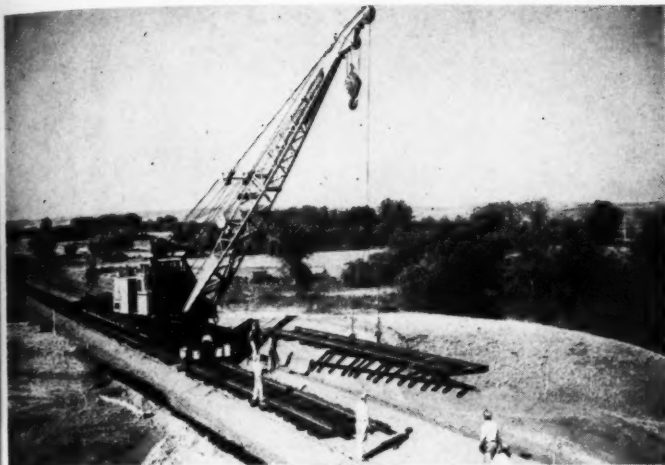
secondhand. A total of 30,000 new and 20,000 used crossties were required. These were applied 18 to a 39-ft and 16 to a 33-ft panel.

One every 10 min

The panels were preassembled at the rate of one every 10 min. They were loaded eight on a flat car and taken out for unloading in strings of about 19 cars. The strings were pushed up behind a diesel locomotive crane of 40 tons capacity, working at the end of the track. The crane handled both the unloading and placing of the panels.

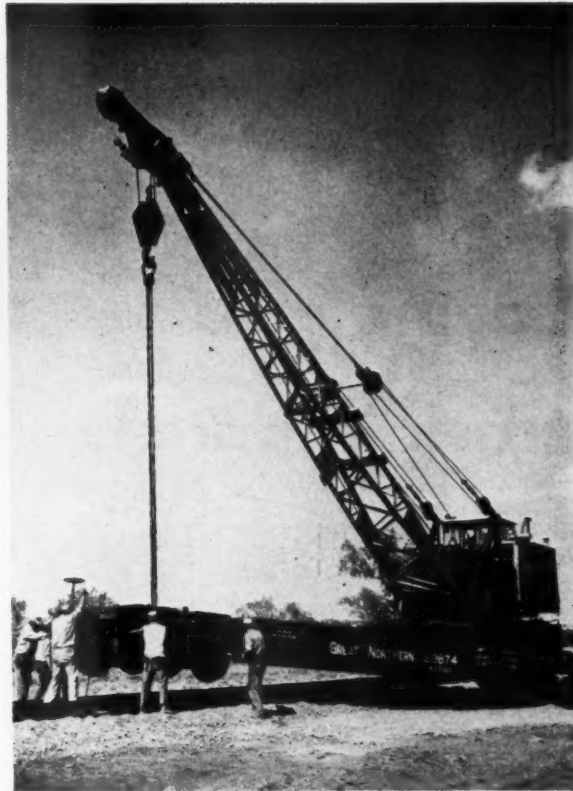
As soon as a car was unloaded, it was lifted off the track by the crane so that the next loaded car could be moved up. Immediately behind this operation was a track-lining machine, followed by a Ballast Regulator and a production tamper. The two latter machines pulled the ballast into the cribs and onto the shoulders.

Approximately 2,900 panels were constructed, being laid on an average of 150 panels per mile. A crew of six men, working in two 8-hr shifts, was able to place about 6,000 ft of track per day.



PANEL is placed on subgrade and heeled into the joint bars attached to the rails of the previously laid panel and then lined. Ballast has been bladed smooth and windrowed at sides so that it can be pulled into the cribs.

UNLOADED CARS were set off the track by the crane so that the next loaded car could be brought up for unloading. When all had been unloaded, they were set on the rails to be returned for another load.



set off the track

Bridges were built in advance

The Glasgow branch is the third line constructed by the Great Northern to an Air Force base in the past three years. In 1956 a two-mile spur was built to the base at Grand Forks, N. D., and, in 1957, a 16.81-mile branch line was completed to the base north of Minot, N. D.

The Glasgow branch line follows the natural bed of Cherry creek for most of its distance. Its maximum grade is 1.5 per cent, compensated for curvature, except at the very end on the base where the maximum grade is 1.9 per cent. Maximum curvature is 8 deg 30 min. The line, in general, ascends from the GN main track to the air base.

The grading work was contracted to Peter Kiewit Sons' Company. The estimated grading required is 400,000 cu yd, including common excavation, channel-change excavation and common borrow.

The culverts were placed and the bridges erected by railroad forces in advance of the grading work. Eight timber bridges of creosoted material were required for waterways and cattle passes. A total of 74 culverts, totaling 3,550 lin ft, were required. These are of concrete and corrugated-metal pipe ranging from 24 to 48 in. in size.

By constructing the bridges and doing the culvert work in advance of the grading, the laying of the track panels could proceed without interruption.

The first revenue train was operated over the new line on September 22. Since the grading work got underway on July 23, the total elapsed time until the line was placed in service was eight weeks and five days.



FLEET of Caterpillar earthmoving equipment gouges out a big cut to bring it down to grade for the new branch line.



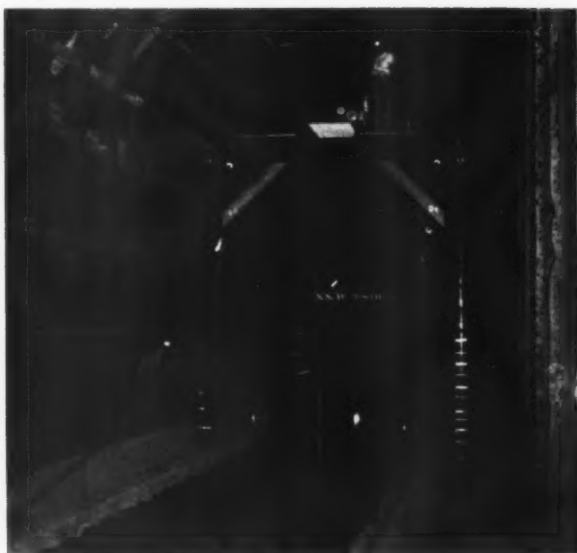
BRIDGES were erected by railroad forces in advance of the grading work. Structure in background is a cattle pass.

At about the same time the Great Northern was building a branch line with preassembled sections the Norfolk & Western was

Laying a tunnel track in panels



COMPLETED TUNNEL before track was laid. Note the drainage troughs which were used as runways for gantry-crane wheels.



GANTRY, straddling a gondola, lifts track panel into clear and then is pulled forward to place it on floor of the tunnel.

● The panel method of laying track can also be used to advantage in a tunnel. This was shown in a recent project on the Norfolk & Western in which 8,240 ft of track were laid in a new tunnel in a little more than three days. Here's the situation:

The N&W had constructed a new tunnel 1.56 miles long to connect a mine track spur with an extension. The bore, known as the Sandy Ridge tunnel, has a concrete floor with a drainage trough along each side. The problem was how to lay the track in the tunnel, which was to have continuous welded rail.

The solution decided upon was to lay the track in 39-ft panels using 132-lb rail which would later be shifted over to serve as the inside

guard rails. The situation obviously called for an entirely different method of laying the panels than that described in the article on preceding pages. The method developed by the engineering and maintenance of way departments involved the use of a traveling gantry, built especially for the purpose in the road's material yard at Roanoke, Va.

How gantry was built

Consisting largely of structural steel beams, the gantry had four steel legs terminating in wheels that operated in the drainage troughs along the sides of the tunnel. The legs supported a platform carrying a motor-driven hoist with three drums. Cable

from the drums extended in both directions, being anchored in one direction by a truck and in the other by a gondola. Thus, the operator could move the gantry by winching in the cable in the direction of movement.

The sections of track, which were likewise fabricated at the roadway material yard, were shipped to the tunnel in gondolas. To place them in position on the floor of the tunnel, the gantry was spotted over a loaded car. The third hoist line was attached to a panel which it lifted into the clear. The gantry was then moved forward and the panel lowered into position on the tunnel floor. While the track bolts were being placed and the section alined the gantry returned for another panel.

Anchor bolts prevent rock falls in tunnels on Reading



SECTION of roof in one of Reading tunnels where anchor bolts were applied. Mine roof ties were also used here to help stabilize rock surface.

Special bolts designed for anchoring rock surfaces have been used on the railroads to stabilize the side slopes in rock cuts. Now they have been applied to the roofs of railroad tunnels to prevent rock falls. This application has been made on the Reading in two tunnels, one 1,932 ft and the other 3,409 ft in length.

Facts about rock anchor bolts

Anchor bolts of the type used by the Reading to prevent rock falls in tunnels are made in various sizes from $\frac{5}{8}$ in to 1 in. in diameter. They come in lengths varying from 2 ft to 7 ft. Longer bolts, if required, can be made up by attaching extensions.

The bolts are installed by inserting them in oversize holes drilled to the proper depth in the rock. The end inserted in the hole is so designed as to anchor the bolt firmly. As to the means of anchorage, there are two general types of design. In one type the end of the bolt is slotted to fit over a wedge placed in the hole. Anchorage is obtained when the bolt is driven against the wedge, causing the slotted end to spread and to press against the walls of the hole.

In the other type a wedge screwed onto the threaded end of the rod is driven into an expanding shell placed in the hole. The shell is thus forced tightly against the sides of the hole.

It was explained by a Reading spokesman that both types are equal in effectiveness. However, he went on to say that the expansion-shell type is preferred for roof work because it requires less exactness in the depth to which the holes are drilled.

Both types of bolts are threaded on their outer ends. When the bolt has been inserted in the hole drilled for it a steel plate washer is placed over the protruding end. A nut is then applied to hold the plate tightly against the rock face.

● The problem of rock falls in tunnels has plagued the Reading for many years. But those days are gone, the railroad feels, thanks to a new method of dealing with this problem which involves the use of rock anchor bolts.

These bolts, which are described in the box at left, have been used recently to stop rock falls in two Reading tunnels. They have, says the railroad, proved both effective and economical and have improved safety conditions in the tunnels while reducing maintenance costs. It claims that this represents the first use of the bolts for this purpose on any railroad in America.

The problem of rock falls was encountered in two of the Reading's eight tunnels. This condition results primarily as a result of water seepage through seams in the rock walls and arches of the tunnels, accompanied by temperature changes. As a result of the action set up by alternate freezing and thawing of the water, sections are loosened and may become dislodged.

Why rock bolts were used

A study was made to find a method of preventing the falls, preferably one that would be less costly and quicker to install than timber lining or steel beam roof supports. Consultation with Bethlehem Steel Company indicated that roof bolting might be the answer to the problem. This method, developed by Bethlehem Steel, is recommended as a sound method of roof control by the U. S. Bureau of Mines.

Basically, the method involves the use of special bolts anchored into holes drilled in the rock. Nuts applied to the ends of the bolts over square plate washers are tight-



1 Working from elevated platform, a workman uses a stoper drill to bore an oversize hole for an anchor bolt.



2 Inserting a bolt in drilled hole. This particular bolt is type in which a wedge is inserted in slotted end of bolt.

They go in drilled holes and nuts are tested to

ened to compress the rock, thereby stabilizing the arch of the tunnel.

The two tunnels in which the roof bolting technique was used are the Black Rock tunnel and the Mahanoy tunnel. The first named, located near Phoenixville, Pa., is 1,932 ft long. It was blasted out of rock by black powder between 1835 and 1837, only a few years after the chartering of the Reading in 1833. It is the railroad's oldest tunnel.

The Mahanoy tunnel, located east of Mahanoy City, Pa., is the longest (3,409 ft) tunnel on the road. This tunnel, which pierces Broad Mountain, was constructed between 1859 and 1863 by the East Mahanoy Railroad, later leased by the Little Schuylkill Railroad which, in turn, was leased by the Reading in 1863. Both of the tunnels are single track.

The roof bolts were applied first in Black Rock tunnel. Since there are no ventilating fans in this tunnel to carry off engine fumes it was necessary to place the compressor and auxiliary lighting generator outside the bore and to run service lines to the work location. For the same reason the diesel locomotive used to haul the car carrying the working platform had to be taken out of the tunnel while the work was under way.

The Mahanoy tunnel, however, is equipped with fans that furnish a continuing supply of fresh air. Hence, when doing the bolting work in this tunnel, all the equipment

was mounted on cars and the locomotive was kept attached to the work train for quick removal when clearing for trains. In addition, local freight services were temporarily rescheduled so as to cause minimum interference during working hours. For these reasons, considerable time was saved at Mahanoy tunnel, which otherwise would have been lost in shifting and setting up equipment.

The rolling equipment used in the Mahanoy tunnel included a diesel locomotive: a gondola carrying (1) an air compressor with suitable canopy for protection of the compressor from drilling dust, (2) a portable auxiliary lighting unit and (3) tools and supplies for rock bolting: a tunnel inspection car from which the men did the actual work from an elevated platform: and a cabooses. Because of the fresh air circulating through the tunnel a hinged screen was mounted at one end of the inspection car to protect the men from the draft. Sufficient air passed through the screen to remove the dust that was created when drilling the bolt holes.

To carry out the rock bolting work a special gang was created, consisting of five men—three masons, a carpenter and a mine inspector.

The railroad reports that, in general, the bolts have sufficient strength to hold the rock securely when installed on 5-ft centers. However, the pattern of application necessarily varies with the contour of the tunnel roof and the type and condition of the rock to be secured. The



3 Stoper hammer was used to drive bolts solidly into holes. Pattern of placement varied depending on condition of rock.



4 Plate washer was placed over end of bolt (with or without mine roof tie) and nut was tightened with impact wrench.

to assure proper tension

pattern used in the Reading tunnels was determined by a joint inspection of the various locations by engineering and maintenance personnel of the railroad, representatives of the Bethlehem Steel Company and a consulting mining engineer.

Holes for the rock bolts were drilled by a stoper drill, and they were driven solidly into position with a stoper hammer. A steel plate washer, about 6 in square, was placed over the end of each bolt before the nut was applied.

The nuts were tightened with an impact wrench. A torque wrench was used to test the nuts to be sure they were being tightened the correct amount.

The work in the tunnels also included, at some locations, the placing of steel roof ties and wire mesh to stabilize areas of loose material. These roof ties are varying lengths of metal with square corrugations. They are applied over the bolts before the plate washers are placed. In some cases they extend between adjacent bolts. Their purpose is to prevent loose material from falling onto the track and to keep the elements from attacking the unexposed rock.

A spokesman for the railroad, referring to the tunnel bolting work, made this comment: "The experience gained has resulted in more economical tunnel maintenance in less time, and, more important, increased safety for the traveling public and railroad personnel."



5 Torque wrench being used to test nut on an anchor bolt. Note varying arrangement of bolts.

Getting

ready

for winter . . .



THE ROCK ISLAND has long struggled with the problem of keeping snow out of cuts like this.

Side slopes of narrow cuts . . .

● Railroads in the Great Plains states are beating the long-time problem of snow pile-up on the tracks by a continuous program of earthmoving to create "blow-through" cuts.

Snow in this region, as elsewhere, has long been a troublemaker. Many miles of snow fences have been built and maintained to keep blowing snow from piling up in the cuts, which are sometimes narrow and steep-sided.

In spite of the fences, snow can block the cuts in winter months. That's why, on some roads, the recent trend has been away from fencing the snow out of the cuts, letting it blow through. By widening the cuts and sloping them more gently, it has been found that snow pile-up is greatly reduced; snow simply blows through the cuts.

The Rock Island is a road that has carried out an extensive cut sloping program during 1958. The work is being done in Kansas and Colorado on the road's Omaha-Denver main line. In this territory, because of the rolling nature of the countryside, the original cuts are small and numerous.

Using off-track earthmoving equipment the Rock Island has kept a crew in the field for the entire season to make as much progress as possible before winter closes in. The

sloping work proceeds from cut to cut on a continuous basis with the waste yardage usually going into low spots along the right of way.

Using company-owned machines

The Rock Island is doing its cut sloping with railroad-owned machinery. When recently seen in operation about 25 miles east of Goodland, in western Kansas, the

outfit consisted of a three-man crew operating two Caterpillar D7 tractors with Cat No. 70 Scrapers and a LeTourneau-Westinghouse Model "C" Tournatractor with LP scraper. In advance of the work, grade stakes had been set to give slopes of as little as 4:1. Because the right of way varies in width here from a minimum of 50 ft to a maximum of 150 ft, it is necessary to make some slopes steeper than others. Regulated by the



LOADED TRACTOR-SCRAPER (Cat D7—No. 70) starts short run from cut to dump area. Outfit also includes LeTourneau-Westinghouse "C" Tournatractor with LP scraper.



WITH SLOPES CUT BACK like this snow will blow across the tracks instead of piling. In background is cut shown on opposite page.

... are flattened to keep out snow

heights of the banks being reshaped, finished cuts now reach 30 to 40 ft to each side of the track centerline, whereas the maximum was formerly about 25 ft.

The D7 tractor cuts back the bank on one side of the rails while the wheel tractor works on the other. The second D7 doubles as bulldozer and scraper rig, depending on the requirements of the work. The grading is entirely in earth, no rock being

encountered at any of the job sites.

After self-loading their scrapers the tractors haul the 12-yard loads of the sandy clay varying distances of from 100 to 600 yards, depending on the size of the cut. To dispose of waste materials, the rigs fill low spots along the right of way, widen the existing roadbed and flatten the slopes of fills.

About eight minutes is required for the machines to make a cycle on

the long hauls. Working as a bulldozer, the second D7 spreads fill material when it begins to pile up, smoothing the contour. When 'dozing' duties are finished, the tractor picks up its scraper and joins the other machines on the slopes. Final shaping is done by one of the scraper units.

The largest cut resloped during 1958 required the movement of about 38,000 cu yd and entailed cutting the 40-ft high banks back about 35 ft more on each side.

After the banks have been worked back to the desired slope, an 8-ft wide ditch is cut alongside the track, 12 ft from the center line and 5 ft below the base of rail.

The three-man crew works a 40-hr week. Reshaping of the cuts on the Omaha-Denver main line began in June 1957 and continued until November when cold weather forced a cessation until May of this year. In all, 148 miles are to be reworked on the Western district, with a total of 110,000 cu yd of earth to be moved this year.

General Roadmaster K. H. Carl estimates that there are about four years' work ahead before the machines reach the endpoint at Limon, Colo., about 100 miles from Goodland.



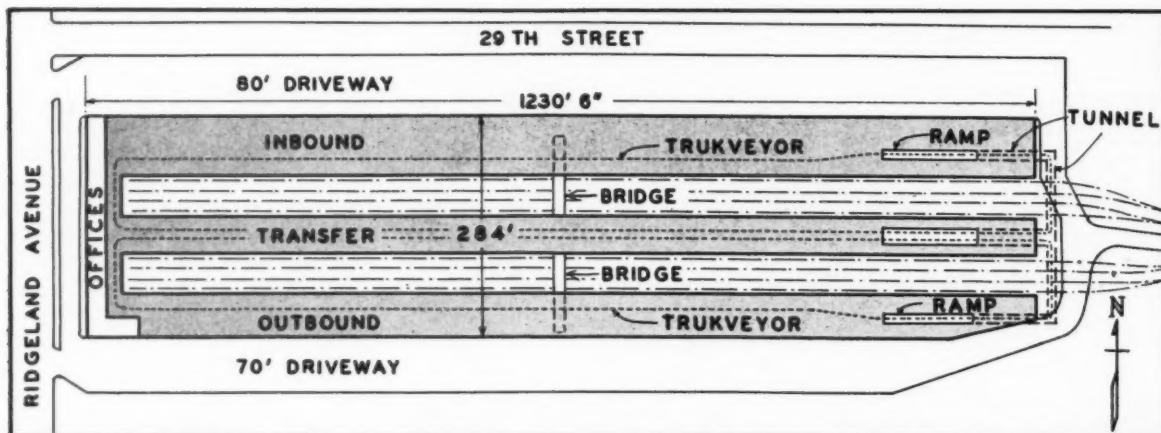
WASTE MATERIAL dumped by tractor-scraper rig is spread by Cat D7 bulldozer near Goodland, Kan. Program called for the moving of about 110,000 yards of earth this year.



INTERIOR of the Burlington's recently completed freighthouse structure, with 350,000 sq ft of covered area, is said to be the No. 8 at Berwyn, Ill., has two groups of four tracks each. This largest Butler building ever constructed as one unit.

This freighthouse is big, modern and ho

Tow chains that go under the tracks instead of across them at grade—crossover bridges that retract under the platforms—these are only two of many features in new facility at Chicago

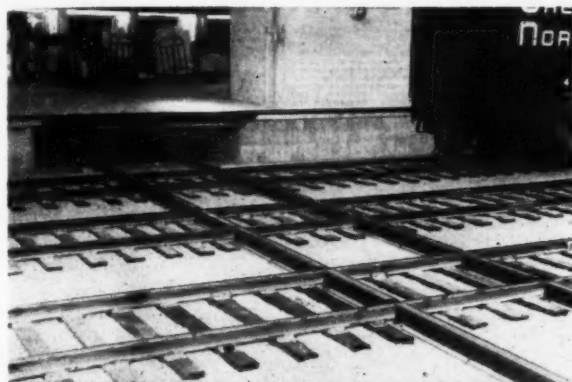


TRANSFER PLATFORM is connected to the adjacent platforms by separate Trukveyor circuits. The inbound platform allows 109

truck tailboard spots and the outbound 96 truck spots. The three platforms (shaded area) provide a total of 195,000 sq ft of area.

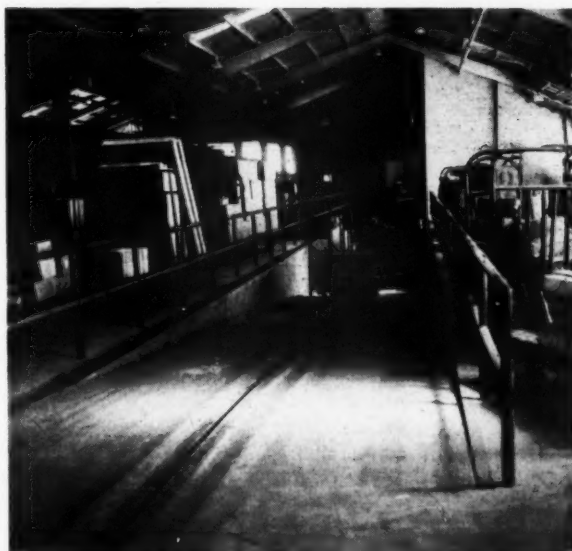


CROSS BRIDGES connect the inbound and outbound platforms at their midpoints to the middle transfer platform.



RECESSES, into which the cross bridges may be retracted, are provided beneath the platforms so that the house may be switched.

has new features



RAMPS lead Trukveyor circuits to tunnels beneath the tracks so tow lines do not have to be stopped while the house is switched.

RAILWAY TRACK and STRUCTURES

• When they switch cars at the Burlington's new freight-house at Berwyn, Ill. (Chicago), they don't have to stop the underfloor tow-chain circuits. Reason: The circuits (there are two) go under the house tracks in tunnels.

This is only one of several interesting features of the large (\$3 million) facility the Burlington has constructed at the west end of its new Cicero Automatic Classification yard. Its size alone (284 ft by 1230 ft) is sufficient to command attention.

Fronting on Ridgeland avenue, the new freight-house (known as No. 8) permits all operations to be conducted under cover. It consists of a two-story headhouse and three platforms forming an elongated "E" with a cross platform at the headhouse end. It has a total of 195,000 sq ft of floor space and can accommodate a total of 200 cars on two groups of four covered tracks each.

The headhouse is a two-story building, 284 ft long by 24 ft wide, of brick and concrete. The freight office staff and supervisors occupy the ground floor. The second floor contains lunchroom, washroom, locker and lavatory facilities for the freight-house dock employees. A special wall treatment, called Glazed Cement, gives the surface of the concrete blocks forming the interior wall surfaces a glazed-tile appearance. This finish is said to be impervious to water. It also facilitates cleaning.

Building is rigid-frame pre-fab

The freight-house is constructed of galvanized-steel panels on rigid steel frames built by the Butler Manufacturing Company. This is said to be the largest Butler building ever constructed as one unit, consisting of 350,000 sq ft of covered area. Also, although this company has designs for prefabricated buildings with 120-ft spans, the 70-ft span used over the outbound platform of House No. 8 is reported to be the widest built at this writing. Ragnar Benson, Inc., Chicago, as the general contractor, built the headhouse, and installed the concrete platforms and foundations, drainage, plumbing and electrical facilities.

The south working platform, 76 ft wide, handles the outbound business. From this platform outward-bound freight is stowed in cars set out on three of the four southerly tracks in the house. This platform has 96 truck spots.

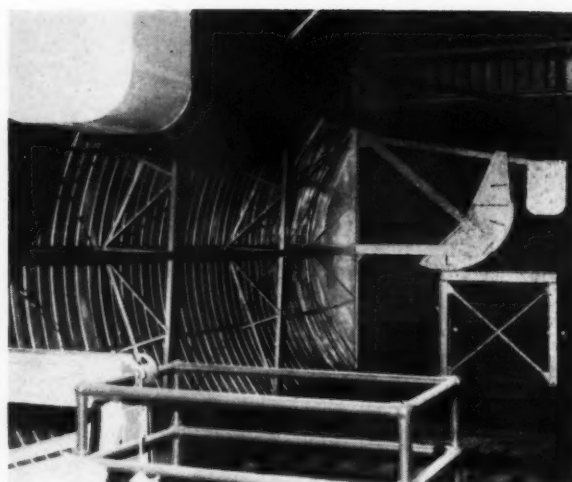
The north working platform is for inbound shipments arriving in both cars and highway trucks. The truck tail-board space is used primarily by the Burlington Truck Lines. Certain doors are assigned for city delivery merchandise and others for outbound and interline shipments. This platform is 56 ft wide and provides 109 tailboard spots.

The middle working platform is used as a transfer medium where shipments can be directed from one car or truck to another truck or car. This platform is connected to both the north and south working platforms by two circuits of a Link-Belt Trukveyor system. Each Trukveyor circuit consists of an underfloor tow chain, 2,580 ft long, for hauling small platform trucks. One circuit runs clockwise and the other counter-clockwise so that both lines on the middle platform run in the same direction to avoid accidents.

An unusual feature of the two towing circuits is that they each descend by ramps at the car-switching end of the freight-house to pass beneath the four tracks in a tunnel provided just outside the building. This feature permits



SWITCHING is done from the east of the freight house. Opening for each four-track group is enclosed by a single door.



TRACK DOORS of aluminum on a steel frame are of the rocker type. Electrically operated, they open and close in 30 sec.



DERAILS have a safety device which prevents them from being thrown until the cross bridge and door have been cleared.



HEADHOUSE provides for supervisors and office staff on lower floor and welfare facilities for dock men on second floor.

the freight house to be switched without stopping the tow lines as would be necessary if the tow chains crossed the tracks at grade.

Each Trukveyor system may be stopped by any of the working personnel by pulling on a pendant rope switch should an emergency require this action. These disconnect switches are spaced approximately 150 ft apart along the circuit. Through talk-back speakers, spaced 120 ft apart on the platforms, the person responsible for stopping the movement reports his reasons for doing so to the head office. When the difficulty has been cleared up, he then presses one of the stop-and-start buttons located on the columns to set the Trukveyor in motion again. Before it starts, however, there is a short time lag during which a warning "beep" tone sounds to alert employees.

Both the inbound and outbound platforms are connected at their midpoints to the middle transfer platform by cross bridges, 46 ft long and 16 ft wide. An interesting feature of these bridges is that, when the house is to be switched, they can be lowered and then retracted beneath the platforms by push-button control.

Each group of four tracks enters the house at the east end through large rocker-type aluminum doors. These

are about 55 ft wide and may be opened or closed in 30 sec by electric motors with push-button controls. A derail on each track must be thrown before a switch engine can enter the freight house. A safety device, however, prevents a derail from being thrown until the movable cross bridge and the rocker-type door have both been moved into the clear.

For lighting the inside working areas roof panels of clear plastic are provided, which are supplemented by mercury-vapor lamps. Reel-type extension lights, which can be plugged into the nearest receptacle, are available to the men working inside trucks and cars.

In addition to the talk-back speakers, the communication system includes a paging circuit and an intercom system. It also includes a pneumatic tube line to House No. 9, a mile east of Cicero yard, for handling interchange routing, bills and miscellaneous papers.

This modern facility has resulted in faster handling of JCI freight than was possible when this business was handled at Houses No. 1 and No. 2, located in mid-city. Its proximity to the new classification yard enables a later "pulling time" for cars leaving on afternoon and evening trains than was possible previously.

Troubles of a subway track man

They say misery loves company. If you think you have problems due to traffic interruptions, lack of working space and other conditions along the track, just read this account of the difficulties involved when installing double crossovers in a New York subway.

● You fret sometimes because trains interfere with your work? It's tough you say, when you have to clear for trains several times a day. You're bothered because your machinery is tied up during these periods, and your men are idle.

Sometime when you are thinking about these troubles you are having, why not give some thought to the track man who has *real* troubles—the man who works in a metropolitan subway. Trains zip by so frequently he's spending most of his time getting out of the way. True, he doesn't have to worry about machinery because he probably doesn't have any to begin with, except some small units. If he did have on-track machinery he wouldn't have any place to put it when he had to take it off the track.

In fact, he is even shy of space for piling new or old materials. And to complicate matters further he can never allow himself to forget the ever-present hazard of the third rail.

So you think this is an exaggerated picture? All right, let's take an actual example. This was a job done in the Lexington Avenue subway in New York. It involved the installation of two double crossovers, each connecting a central "emergency" track with north and south-bound local tracks.

The material to be installed included two diamond crossovers, eight special frogs, eight conventional frogs, and eight switches, all supplied by L. B. Foster Co. The job was contracted by the Bonaco Construction Company.

The contractor knew he was un-

dertaking a tricky job. All materials had to be hauled in on work trains, and there was practically no room for storage. Besides, there was no possibility of employing any power equipment other than small tools. The maximum train interval was only 20 min, and live 650-volt third rails threaded the work area.

Because of the limited storage area, logistics was a tough problem. Only small amounts of materials could be brought in, and they had to be stockpiled close to the point of application to reduce rehandling. All materials had to be spiked down to prevent pieces from coming loose and derailling trains or short-circuiting the third rail. To make things more complicated, all ballast had to be cleaned in place by hand, then stockpiled for later use.

The contractor started work on the center track because it was taken out of service. When as much work as possible had been done on this track, Bonaco tackled the active local lines. Only preparatory work could be accomplished here during the day shift because of the 6-min interval between trains; actual installation work was done at night when more time was available. In fact, on the northbound line, traffic could be suspended completely from midnight until 5 am. On the more active southbound line, however, work periods were limited to 20 min, except for a few occasions when complicated work was required and a 40 min period was allowed.

One of the trickiest operations was

replacing old ties with new ones without disrupting traffic. Often a tie could be pulled out and another pushed in its place. But sometimes the quarters were so cramped that old ties first had to be sawed into pieces before they could be extracted. Several of these ties had to be removed in this way, then new ties were placed longitudinally between the rails and rotated into position. This was tough enough with conventional ties, but some were as long as 23½ ft.

Careful planning was necessary to get as much work done as possible between trains. For example, to replace a section of rail, a maximum number of spikes would be removed ahead of time. Then, after the train had passed, the remaining spikes would be extracted quickly, a new rail and accessories moved in by hand, alined and spiked just enough to permit safe travel for the next train. The remaining spikes and accessories were placed later.

A hazardous phase of the job was adding new side approach fixtures to the live third rail. To do this, the men stood on insulated pads and drilled directly into the live rail. It was tricky, but careful work eliminated accidents.

With the exception of power drilling with small tools and a portable generator, all work was done by hand, including heavy handling. Moving some frogs, for instance, required the entire 16-man crew.

Now, what were you saying about the troubles *you* have?



THE EASY PART—With the heavy work all done these workmen are making final adjustments on one of the crossovers.



"LARGEST AND FASTEST in the world"—that's how the Chesapeake & Ohio describes its new coal-loading dock at Toledo, Ohio. The facility is designed to handle 6,000 tons of coal an hour from railroad cars into vessels. The twin high-speed rotary car dumpers (center of view) will dump two cars simultaneously. Feeder belt carries the coal to main belt that conveys it to the movable loading tower in foreground. Main belt is 8 ft wide and moves at a speed of 600 ft per min. The entire unloading tower moves the length of the dock on two sets of rails, one on the dock wall and the other 75 ft inland on a wall paralleling the dock. The ship being loaded stays in one position while the tower moves to fill successive holds. The coal is trimmed into the holds of vessels through a telescopic chute and distributed by a rotating cowl. After dumping, the empty cars are routed over a gravity-fed loop to the "empty" yard for return to the mines or for the loading of ore. There is space for 262 loaded cars and 796 empty cars.

News briefs in pictures



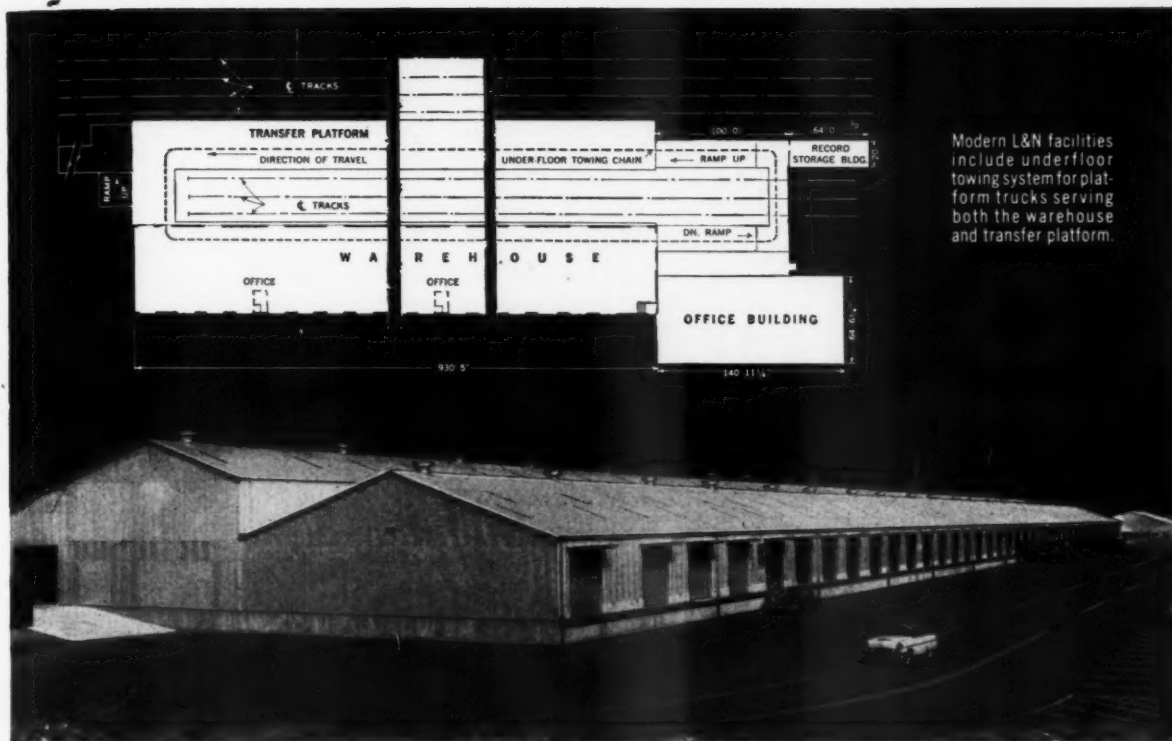
RAIL-RENEWAL WORK went ahead practically at full throttle on the Union Pacific this year. Early in October the road put the finishing touches on a program that called for the laying of 86.98 track-miles of rail at a cost of nearly \$4,500,000. The rail going in is 133-lb and that coming out is 131-lb.



SPEEDY REMOVAL of an unwanted half-inch of manganese steel on a frog is accomplished on the spot with the aid of a gouging torch that directs a blast of compressed air parallel to the electrode. Torch was made by Arcair Company, Lancaster, Ohio.



FOUR-TRACK "shoo-fly," 1,500 ft long, by-passes site of an underpass that will carry the Northwest Expressway under the tracks of the North Western's Galena division at Hubbard and Green Streets, Chicago. The structure will be in use about two years.



Modern L&N facilities include underfloor towing system for platform trucks serving both the warehouse and transfer platform.

Overall size of attractive L&N freight house is 138' x 1,030'. Armco ALUMINIZED STEEL® covering material (a special hot-dip aluminum coated steel) requires no expensive painting or other finishing.



Truss-Type Armco Steel Buildings Meet Big Building Needs for L & N

Radnor Yard, near Nashville, Tennessee, is the site of one of the largest factory-made buildings for railroad use . . . a truss-type Armco Steel Building. The multiple-span structure serves as modern freight house facilities for the Louisville & Nashville.

Truss-type Armco Buildings provide an efficient yet low-cost way to solve big building problems. With clear span widths up to 100' and practically unlimited lengths, you can select the exact size you need . . . and easily fit it to your specific requirements. The post-free interior gives complete freedom of floor plan layout.

What about costs? You get all the economies of a mass-produced building. All parts are prefabricated to eliminate waste. Also, your savings continue year after year with low maintenance costs.

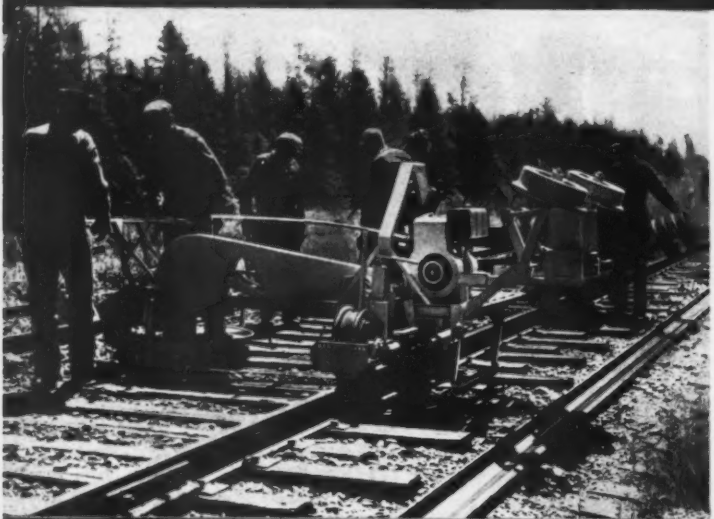
For more information on the complete line of Armco Steel Buildings for railroad use, write us for Folder 11856. Armco Drainage & Metal Products, Inc., 3467 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corp.



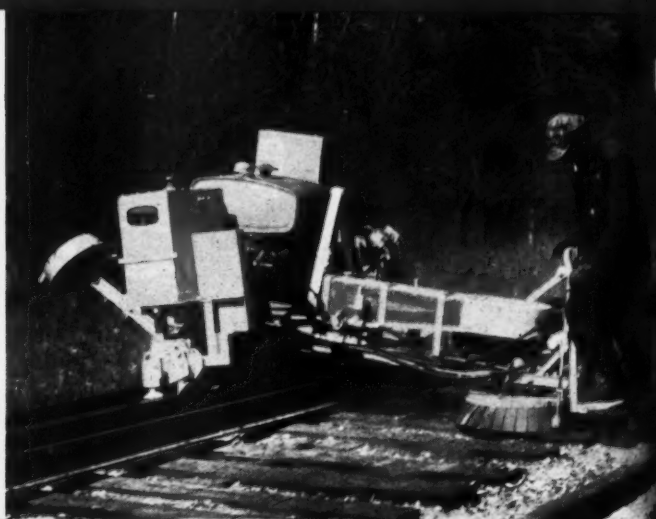
For more information or prices,
Call Western Union and ask for Operator 25

ARMCO STEEL BUILDINGS

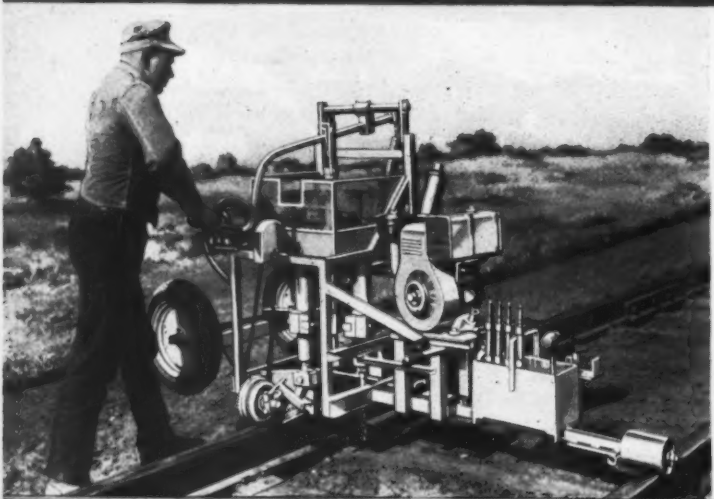
These **NORDBERG** "Mechanical Muscles" give you **QUALITY** and **SPEED** on your **RELAYING OPERATIONS**



BALLAST ROUTER . . . Removes high cuts, ridges and sweeps the track surface so that an adzing can be done faster, with greater precision and with greater safety. Cuts a flat trench, the depth of which can be set by an adjustable stop.



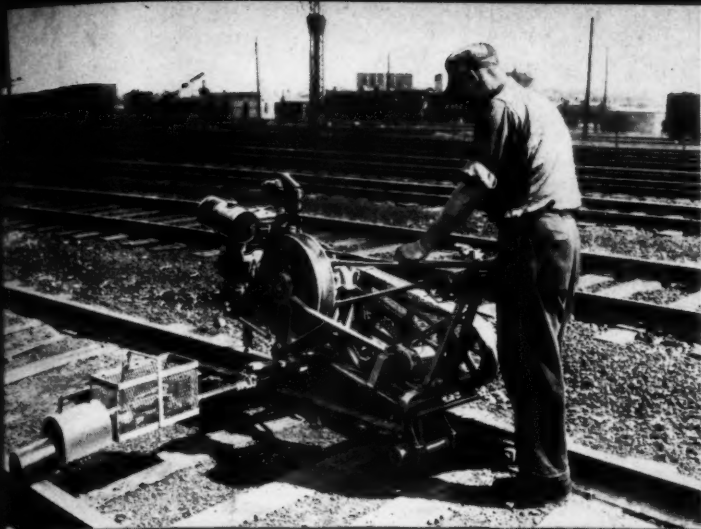
ADZING MACHINE (Self-Propelled) . . . A seven machine, the power to speed adzing. Self propulsion provides for feeding into this, permitting the operator to work more efficiently. Tracks are adzed level and in the same plane.



TIE DRILL . . . Drills two holes at once and is by far the fastest tie drill on the market. Operated entirely by one man who can seat and drill 48 holes in the 24 ties of one rail length in just 2½ minutes for rail holding or plate fastening spikes.



SPIKE HAMMER . . . Provides a fast, easy method for driving spikes straight, vertical to the tie, and to the correct depth. With this machine a properly organized crew can drive about 600 spikes per hour, 400 on either side of the rail.



POWER WRENCH . . . Built to stand up under the most severe service, yet is light in weight and easily handled on or off the track. A fast, powerful tool that provides uniform tightening of track bolts.



SPIKE PULLER (Self-Propelled) . . . A 2-man machine that pulls spikes at 400 per minute. An upward pull in excess of 12,000 lbs., is exerted through the spike tongs.



DUN-RITE® GAGING MACHINE . . . Follows right behind the editors, and follows the rails to the last 10 feet of track, so the head-to-head gage is correct. Speed and extremely accurate and uniform gaging are made possible with the Dun-Rite because the plates are passed before the rail is placed.



BRONCO . . . Uniquely designed crawler tractor designed for propelling the Dun-Rite Gaging Machine and propager. Rides on the ends outside of the rail plates. Easily added to existing machines.

● **NORDBERG Track Maintenance Machinery** improves quality and increases speed in rail relaying operations. The Nordberg Maintenance Machines shown here are part of the full line of "Mechanical Muscles" that have been designed, built, and proved in use with the cooperation of track maintenance men. This equipment has actually revolutionized maintenance methods in

scores of operations on the nation's railroads.

With these efficient "Mechanical Muscles" in your rail gang, maintenance operations can be done better, faster, and at lower cost.

Write for literature describing any or all of the full line of modern, money-saving Nordberg Track Maintenance Machinery for meeting today's maintenance requirements.

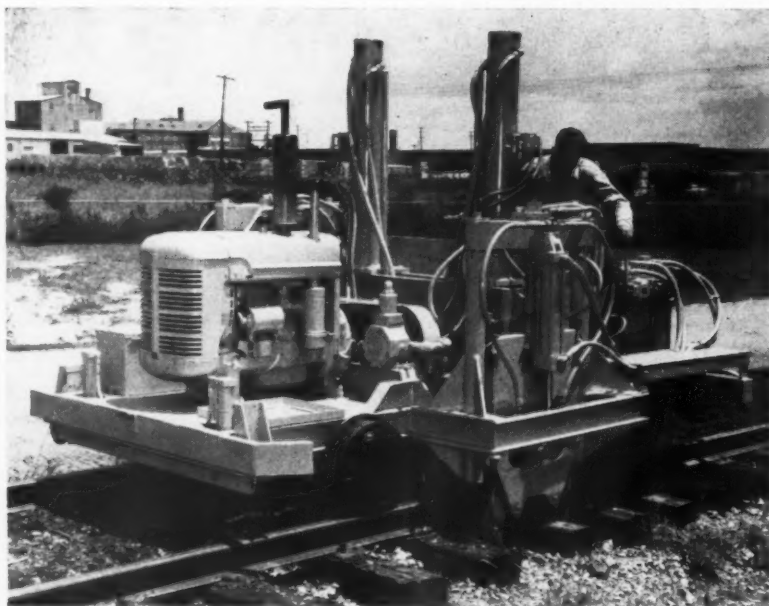
NORDBERG MFG. CO., Milwaukee 1, Wisconsin



NORDBERG
Mechanical Muscles®



R856



Redesigned tampers for . . .

Super Jack-All

A NEW MODEL of the Kershaw Super Jack-All has redesigned tamping heads and feet. The tamping guide now works vertically to give better compaction and spotting, according to the manufacturer. The manifold system has also been improved to provide a minimum of hy-

draulic hosing. The machine tamps on the side of the ties with both vibration and compaction and is equipped with an automatic tie finder.

It is claimed that the machine has a 30-sec raising and tamping cycle and has satisfactorily raised track ahead of two production tampers. *Kershaw Manufacturing Company, Dept. RTS, Montgomery, Ala.*



Five steps combined with . . .

Tie replacer

RAIL LIFTING, tie removing, tie-bed scarifying, tie replacing and crib scarifying are all accomplished, according to the

manufacturer, with the Kershaw Tie Replacer. This machine utilizes the rams on the scarifier head to clamp the rail and then lift it. This allows the tie to be removed without raising the track. The machine then scarifies the tie bed and may

also be used to insert the tie without raising the track. It is claimed that in a recent test the tie replacer, operating with a new track crane, replaced ties at an average rate of 58 per hour without humping and with only four men. *Kershaw Manufacturing Company, Dept. RTS, Montgomery, Ala.*



Reach high and low with . . .

Aerial elbow

INACCESSIBLE places are placed within easy reach through the use of a new unit designated the Model HD-42 Elbow. Essentially, this machine is an aerial boom having a twin bucket at its outer end. It is said to be the first cable-controlled aerial elbow introduced and has direct-acting, aircraft-type controls which it is claimed, provide easy operation and minimum maintenance. Hydraulic lines extend only to the cylinders and no lines pass through the hinged joint.

Because the cable controls are under constant tension, the manufacturer states that the control levers impart a positive feel and give instantaneous response to movement of the levers. Three levers are located on the support shaft of the right-hand bucket and do not interfere with arm movements. A set of levers also is mounted on the mast for emergency control. One lever controls the lower arm, the second the upper arm, and the third the rotation.

The Elbow has a maximum ground-to-floor height of 36 ft 10 in. It reaches 31 ft 4 in horizontally and will bend 8 ft 8 in below ground level. The upper arm travels 270 deg and the lower arm 80 deg. The mast rotates 360 deg continuously in either direction. Work buckets are 22 in by 22 in by 38 in deep and are made of nonconductive fiber-glass-reinforced plastic. Their capacity, together, is 600 lb. *J. H. Holan Corporation, Dept. RTS, 4100 W. 150th Street, Cleveland 35, Ohio.*



Tight budgets of 1958 shut off normal purchases

Lack of chemical treatment and unusually heavy rains in many areas now leave many railroads with right of way where rails are barely visible.

Such railroads are now frantically seeking ways and means of clearing away the debris. And many of them have already

called us in to assist them in working up a chemical control program for 1959. As one able engineer expressed it — "Next year we take the weeds or the weeds take the railroad."

May we also review with you a control program for 1959 — no obligation, of course.

WORKS: JERSEY CITY • MINNEAPOLIS • TEXARKANA, ARK.
KANSAS CITY • CHICAGO • BIRMINGHAM • STOCKTON, CALIF.

READE MANUFACTURING CO.

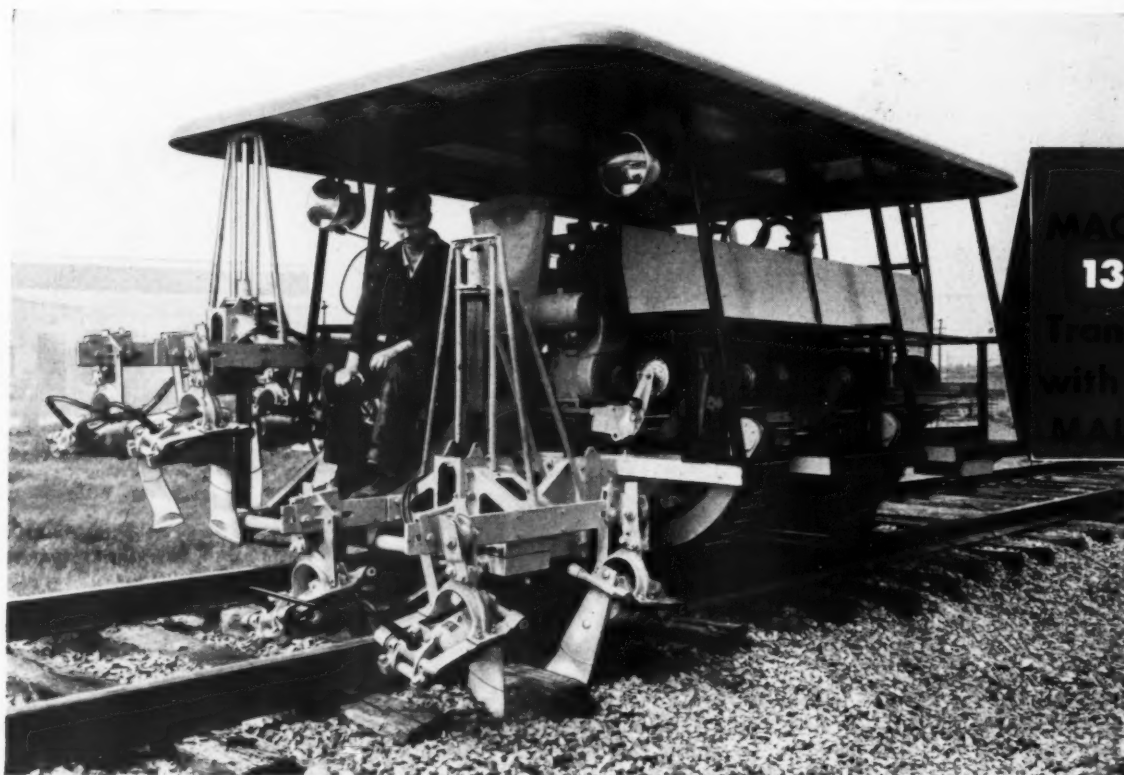
JERSEY CITY 2

NEW JERSEY

NEW CONCEPT IN TRACKS

Tamper **MULTI-GANG*** PACKAGE UNIT

Greatly Lowers Maintenance Costs



A COMPLETE UNIT—all three machines (or other equipment) are housed in Main Car.

RAPIDLY REMOVED FROM TRACK by Crawler Set-Off . . . in a matter of seconds.

POWER DOWNFEED OF INDEPENDENT WORKHEADS . . . operates easily.

HYDRAULIC PROPULSION . . . the Main Car travels up to 25 MPH.

THESE HYDRAULIC MACHINES are easily loaded on or unloaded from Main Car, by hydraulic Tail Rack.

LOOK WHAT THE MULTI-GANG WILL DO:

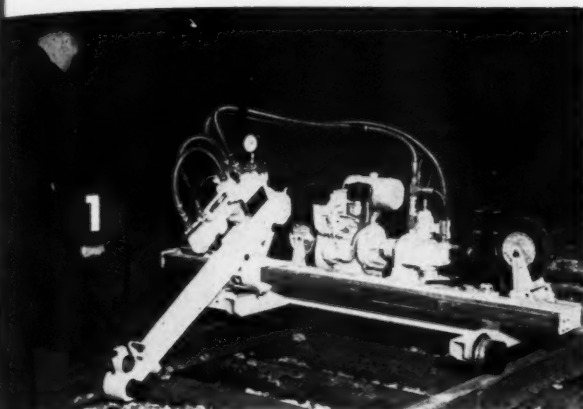
surface • line track • pull spikes without bending • remove or insert ties • torque controlled bolting • drills rail
MULTI-GANG'S Main Car is 171" long x 113" wide x 84" high.

TAMPER MULTI-GANG PACKAGE UNIT

consists of:
Main Car with Power Downfeed Tampers and Crawler Set-Off
Hydrillbolter
Spike Hydrejector—Tie Hydrenower
Comboliner

MULTI-GANG UNIT EXTENDS THE TRACK SECTION

SECTION MAINTENANCE



HYDRILLBOLTER* (Model BD)

Combination Bolter and Rail Drill

Hydraulic Transmission

Minimum Mechanical Replacement Parts

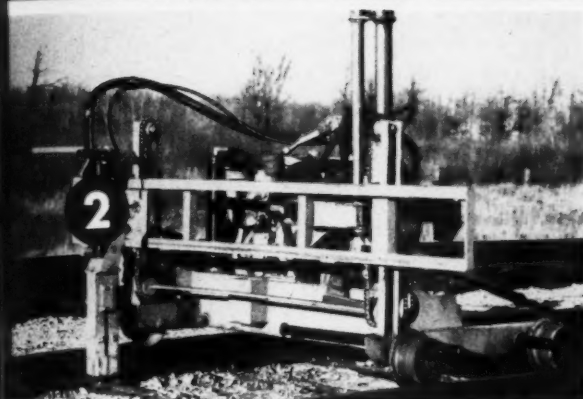
BOLTER

- single control lever, manned by one operator
- automatic change from high speed, low torque, for 'running up' nuts to low speed, high torque for nut tightening
- handles nuts on either side of both rails

DRILL

- drill attachment adapted in less than 2 min.
- manned by one operator
- easily adjusted for different rail sizes
- drill bits quickly interchanged

HYDRILLBOLTER can be removed from track by two men.



SPIKE HYDREJECTOR*

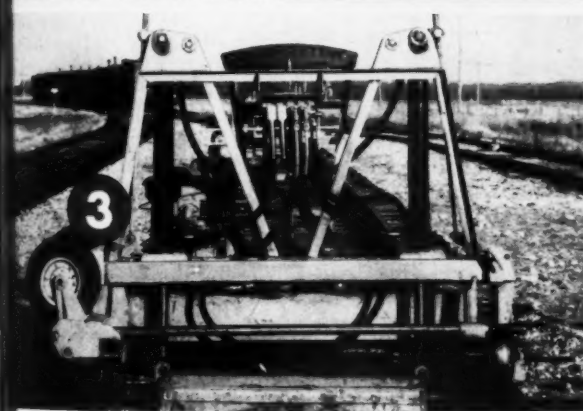
TIE HYDRENEWER* (Model PR)

Combination Spike Puller and Tie Renewer

pulls spikes without bending • lightweight • completely hydraulic • easily operated by one man.

Tie Renewer is adapted to Spike Puller in seconds
No disturbance of track line or surface
Renews without digging out tie ends

Removed from track by one man.



COMBOLINER* (Model JL)

Combination Powered Jack and Track Liner

powerful • lightweight • compact

- 10,000 lbs. thrust to throw the track in either direction
- simply insert lining anchors and slide out wheels to line the track
- lifts track to 10 inches, rail dogs engage automatically
- turntable allows easy pivoting
- cross level indicator reads directly in inches of elevation
- no wheels, axles to interrupt view of rails

Easy to remove from track.

ORGANIZE . . . MECHANIZE . . . ECONOMIZE with MULTI-GANG

For full information, contact

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*Patents Pending

What's the answer?

To be answered in February

Do you have an answer to any of the questions listed below? If so, send it in. Payment—based upon substance and length—will be made for each published answer. If you'd prefer that your name be withheld, we'll gladly comply.

DEADLINE: December 31

- ▶ 1. How can the shoulder and under-track ballast be cut out, loaded and removed from tunnels most economically? Describe procedure and equipment. What is a reasonable cost per cubic yard or track-foot for doing this work?
- ▶ 2. What are the advantages, if any, of the use of screw spikes in lieu of lag bolts for fastening guard timbers to bridge ties? Explain fully, taking into account the economics, mechanics and method of installation.
- ▶ 3. When relaying rail out-of-face, is it practicable to lay both sides simultaneously retaining the staggered-joint pattern, instead of one side one day and the other side the next day? What are the advantages and disadvantages?
- ▶ 4. What are the advantages of corrugated translucent plastic panels for use in roofs and walls of railway buildings? Disadvantages? Do they present any problems of installation or maintenance? Explain.
- ▶ 5. What precautions should be taken before putting a new machine to work at its full capacity? Should it go through a "breaking-in" period? Explain.

Send answers to:

What's the Answer Editor
Railway Track & Structures
79 West Monroe Street
Chicago 3, Illinois

Do you have a question you'd like to have answered in these columns? If so, please send it in.

Spiking toeless joint bars

How should spikes be placed and driven when applied at joints having toeless bars? Why?

Turn around

By L. ALLEN
General Roadmaster
Monon
Lafayette, Ind.

Our experience has been that it is better to turn the spikes around backward from the ordinary method when spiking toeless bars. The spike is placed in the plate and driven vertically, the same as with conventional spiking except that the joint spikes are turned around.

We have found that this method gives satisfactory results with most of the spiking equipment being used because of the clearance required for the chuck of the spike hammer.

We have also found that the clearance of the head from the side of the joint bar is sufficient to prevent the spike from being forced back from the base of the rail when driven. It is found that the resultant line and gage will be better when this method is used. Also when necessary to remove the spikes, the head is more accessible to the tool used in the pulling operation.

Which is better?

By RONALD K. SCOTT
Extra Gang Foreman
Baltimore & Ohio
Barnesville, Ohio

I believe spikes should be placed with the toe of the spike toward the angle bar. Then, when raising track, your ties will come up with the rail. When using machines, a minute wasted in getting a tie up could slow up the machines and cut down on the footage required on this work.

But, on the other hand, if you "back" the spike in it gives the rail a chance to run and not slew the joint ties. Also, when you back a spike in, you can drive the spike down far enough to miss the heads of the bolts,

as well as the angle bar, to permit the rail to run without slewing the joint ties.

Longer spikes

By L. G. LAWSON
Roadmaster
Canadian National
Melville, Sask.

On our railway standard plans call for spikes, when used in joints with toeless angle bars, to be reversed from the conventional method of applying. This we find makes the neatest and best job when spikes and rail are new.

However, many joints, in rail from 85-lb to 115-lb sections, have as little as 1/16 in of the flange of the rail showing under the toeless angle bar. Also, many of the track spikes which are supposed to have a back overhang of the head of 1/8 in, have as little as 1/32 in protruding. This makes it almost impossible for the spike to catch the rail at all. In surfacing track I would state that at least 60 per cent of the ties, in joints with toeless angle bars having spikes reversed in them, stay down when surfacing track and using ballast sleds.

On the other hand, when a spike is turned and used the same as on other parts of the rail, the front of the spike protrudes so far that the tie plate is skewed as far as the shoulder will allow it to go. And, the spike is at least 1/4 in from the rail. When applied in this manner, the spike is only driven to the top of the base of the splice bar. On a 115-lb rail the tie plate is 3/4 in thick, the base of the rail 7/16 in thick, and the base of the splice bar at least 7/8 in thick. This places the spike head at least 2 in from top of tie, which allows only a penetration of 3 1/2 in into the tie. This is hardly



Allis-Chalmers Model D motor grader maintains access road to construction area where 11 additional departure tracks are being installed. This Model D also spreads and levels fill-in areas, constructs drainage ditches, handles parking lot and yard construction and maintenance.

Put Model D economy to work on your off-track maintenance jobs

Allis-Chalmers 50-hp Model D has the right combination of weight, power and traction to give maximum efficiency and economy on a wide range of railroad maintenance and construction jobs.

The low-cost Model D, priced at only one-third the cost of a large grader, is ideal for maintaining yards, grading parking areas and roads, cutting and cleaning ditches, spreading ballast, constructing and maintaining storage areas, handling other railroad jobs.

Special attachments increase the versatility of this motor grader, eliminate the need for specialized equipment. Rear-mounted, $\frac{3}{4}$ -cu-yd loader handles gravel, cinders and other bulk materials . . . hydraulic scarifier cuts 27 $\frac{3}{4}$ -in. swath in hard surfaces. Accessories like power circle turn and front wheel lean add to the Model D's working speed and versatility.

See your Allis-Chalmers dealer. Let his railroad representative demonstrate the Model D on your off-track projects.

These Model D features give you big-grader performance on off-track work:

- ★ *Single member main frame insures long grader life*
- ★ *Husky drawbar and one-piece circle handle heavy loads*
- ★ *Work-boosting ROLL-AWAY moldboard for precision grading*
- ★ *Ground-gripping tandem drive gives more driving power . . . better traction.*
- ★ *Easy-to-handle controls reduce operator fatigue*

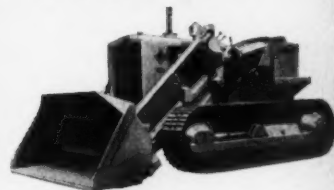
TRANSPORTATION SALES DEPARTMENT, TRACTOR GROUP, MILWAUKEE 1, WISCONSIN

Look ahead . . . move ahead with

ALLIS-CHALMERS



4 Crawler Tractors—
66.5 to 225 net engine hp
4 Tractor Shovels—
1½ to 4-cu-yd standard buckets

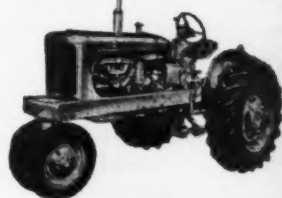


3 Motor Scrapers—
9.5, 17 and 20 cu yd heaped

2 Motor Wagons—
15-cu-yd rock wagon and
24-cu-yd bottom dump heaped



3 Wheel Tractors with attachments
22.8 to 54 belt hp



Fork Lift Trucks—
Capacities 2,000 to 10,000 lb
diesel, LP gas or gasoline;
attachments to fit the job



Engines and Generating Sets—
Types for any power need,
9 to 516 hp;
diesel, gasoline, natural or LP gas



What's the answer? (cont'd)

enough to insure adequate holding.

As long as the present spikes are supplied, I would certainly agree that spikes should be turned in joints with toeless angle bars. However, owing to the fact that 36-in joint bars are used in many cases, this means that the three ties supporting the joint could easily have spikes which do not hold the rail at all. This could well result in kinked joints in hot weather at least.

I would strongly suggest that spikes $7\frac{1}{2}$ in long be supplied for joint ties and that the face of the spike be made $\frac{1}{4}$ in shorter. We would then have the same holding qualities on joint ties as on other parts of the rail. All spikes would be driven in the same manner and we certainly would have a much neater job all around. Even a $6\frac{1}{2}$ -in spike below the head would be an improvement, but I would go along with the $7\frac{1}{2}$ -in spike in place of the present $5\frac{1}{2}$ -in spike.

Decided by conditions

By W. B. O'SULLIVAN
Track Supervisor
Boston & Main
Greenfield, Mass.

This question can be broken into two parts—placing and driving.

Spikes should be placed through the spike hole in the tie plate so as to avoid the bolt and with the head engaging the bottom flange of the bar.

Of necessity, spikes should be driven with a maul as it is difficult to drive them straight with any other tool.

It would appear that the more important phase of the question, and the one most subject to controversy, would be the first, the placing of the spikes.

We may again break the subject into two parts. One will be the choice of spike hole in the plate. The second is the position of the spike head as it is driven; that is, whether it should engage the flange of the bar or be turned opposite so as to permit free vertical movement.

On many properties the choice of spike hole in the tie plate is dictated by policy, insofar as open track is concerned. However, in the area of the track joint, unless the ties are

exactly placed for either a suspended or supported joint, the position of the bolts through the bars with respect to the plate spike holes cannot be predicted. Usually, rail runs with the traffic. This is a varying amount regardless of anchorage. It depends on many factors, such as tightness of anchors (grip), general condition of ties resisting the thrust of the anchors, traffic volume, grade, fluctuation in temperature, and many others.

There can be no quarrel with the statement that it is almost impossible to drive a spike through a plate hole located immediately beneath a nut on a bolt. Therefore, unless considerable time and expense is to be involved, the spike should be driven through the available unobstructed plate hole regardless of conformity with standard open-track procedure. Experience indicates that the location of the spike in the plate has negligible adverse effect, compared with other factors affecting track action in the joint area.

The direction in which the spike is headed when driven adjacent to the joint is also a matter of policy in many cases. The trend seems to be to hook the head of the spike over the bottom flange of the joint bar.

Older practice, derived no doubt from the use of obsolete bar types, demanded that the joint spike be free, if possible, from the bar to avoid slewing the ties as the rail ran.

The toeless bar, of course, will move freely longitudinally through the spike, even in the case of small rail section bars. The spike heads will not be caught by the bolt head or nut unless they are high. If a spike is high enough to be caught by the bolt, it is usually because of a poor supporting tie. In this event, the spike gives as the rail moves rather than the tie moving.

The useful aspect of hooking the spike heads over the bar flange comes when the track is being surfaced. Whether the work being done is part of a spotting operation or an out-of-face raise with the joint ties buried in new ballast, the joint ties will not rise as the rail is jacked unless the spikes are hooked. If the spikes are not hooked, the ties must be raised individually as a separate operation before being tamped. This can be tedious and expensive when joint ties are buried in new stone. This ob-

server has had many miles of track re-spiked at the joints in order to avoid hanging ties in heavy ballasting operations.

There is another consideration active when joints are spiked integral with the ties. It is particularly in evidence in gravel ballast territories. This is the effect of the spiking procedure on tie-pumping action.

In times of deferred maintenance, gravel territories often do not get the attention to surface that the quality of the ballast requires. As a result, joints will pump in wet weather and, sometimes, corrective work is not performed as quickly as one would like.

There is one school of thought which holds that if the rail joint is free to move vertically as well as longitudinally on the tie plates, then pumping will be materially reduced as the joint ties cannot act as pistons.

It has been noted, though, that joints seem to pump irrespective of spiking patterns. On the one hand, if a tie spiked to the joint acts as a pump piston in wet weather, ejecting ballast, then, when the ballast dries out, the same piston action seems to draw fines from the ballast.

Treat same as other ties

By E. J. SWOFFORD
Track Supervisor
Clinchfield
Marion, N. C.

As I see it, the adoption of the toeless joint by the American railroads was a remarkable step forward in track structure. It simplified maintenance in the joint area. By using this type of joint, it can be treated as any other part of the rail, insofar as tie plating and spiking is concerned.

With the modern double-shoulder tie plate, punched for four line spikes and four anchor spikes, no difficulty should be experienced in holding track to gage on the heaviest curves.

In spacing ties $19\frac{1}{2}$ in center to center, which I believe is common practice on most of the railroads in this country, the center of the first tie should be placed directly under the rail ends at the joint and every $19\frac{1}{2}$ in thereafter. By following this procedure where you have 39-ft rails, a tie will be located directly under the rail ends at every joint on one side, and also on the other side



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What's the answer? (cont'd)

if the rail is laid with the joints directly across from the center of the opposite rail. Of course this condition does not always exist, but is certainly ideal where it can be so arranged.

In placing spikes in the double-shoulder tie plates mentioned above, the outside line spike can be placed in the left hole and the inside line

spike in the right, with the anchor spike placed in the opposite corner, or vice versa when the nuts of the track bolts interfere.

On heavy curves where the joints have a tendency to spread or corner, more lock spikes can be added in the other corners until this condition is corrected.

All line spike heads should be left at least $\frac{1}{8}$ in above the base of the rail, not only in the joint area but for the entire length of the rail. By

doing this, any wave action of the rail under traffic will be absorbed in this space and not transferred to the ties below, where it will create a pumping action in wet, muddy ballast.

All anchor spikes should be driven down until the heads come in firm contact with the tie plate as this will hold the plate firmly to the tie. As a result, this will keep dirt, sand, etc., from getting under the tie plate and damaging the tie by plate cutting.

Patching leaks in built-up roofs

When leaks occur in built-up roofs, how can these spots be located and patched? What are the practical or economical limits to such patching? Explain.

Apply water

By H. M. HARLOW
Assistant General Supervisor B&B
Chesapeake & Ohio
Richmond, Va.

Up to the present time no cut-and-dried method for locating leaks in built-up roofs has been developed. It is just about as near a trial-and-error proposition as railroad maintenance men have to cope with.

A leak in a built-up roof may be located quite a distance from where the water comes through the roof deck. On a sloped roof it will, of

course, be located in the portion at a higher elevation. If not visible, because of the gravel or slag on the roof, the gravel should be swept or removed from the suspected location and further visual inspection made.

In hot weather, when the gravel hangs tightly to the soft roofing asphalt or tar, it can be cooled by putting cold water by hose or bucket on the surface. This makes the asphalt less tacky and reduces or eliminates its tight hold on the gravel. More of the semi-loose material can then be removed from the surface in ques-

tion. The cooling will tend to make the leak or crack more visible by reducing the softness and flowing quality of the asphalt.

Applying water in the suspected location of the leak may help to locate it by racing its flow to the leak in the deck. After the leak is located, patching with felt and asphalt, or coating with asphalt, can be done.

When a built-up roof becomes chronically leaky, there is not much to be done except to renew it. A smooth-surfaced roof can have its life extended by coating it every few years with a roof coater, or by applying a liquid coating reinforced with a glass fabric. This type of treatment is hard to apply on a built-up roof with gravel or slag surface, unless a relatively smooth surface can be provided by removal of the gravel.

"Posting" timber piles

When is it practicable to "post" a pile which has deteriorated at the ground line? Explain how this work should be done. Is there any limit as to the number of piles which can be posted in a bent?

When two-thirds decayed

By J. W. PORTER
Supervisor B&B
Great Northern
Minot, N. D.

When a pile is two-thirds or more decayed at the ground line, it is time to post it.

We generally do all this work by cutting out the decayed portion of the pile and placing a creosote block where the decayed portion was removed. For this, a 12-in by 12-in block, about 4-ft long, is used as a

sill and is placed lengthwise with the bent, then driftbolted to the sound part of the remaining pile. If the upper part of this pile is of sound timber, it can be used as a post. If not, a 12-in by 12-in piece of creosoted timber is used instead.

If the lower part of the pile is decayed, then we place two or three pieces of secondhand creosoted timber, 16 in wide and about 3 ft long, laid tight together on the solid ground crosswise under the sill. These are driftbolted to the sill with $\frac{3}{4}$ -in drift

bolts 18 in long, one drift bolt through the sill into each mud block. The post is toe-nailed to the sill after boring through the post to the sill or pile, whichever the case may be.

If the lower part of the pile is sound after cutting off the decayed portion, a 12-in by 12-in post can be used. This is placed under the cap and on the stub of remaining pile. This is known as "pegging a pile."

After the work of placing the post is completed, the post is respiked or bolted to the sway brace.

While doing this work, it is always necessary to take the load off the pile by jacking up the cap. This is done by placing a strut against the under side of the cap to the top of the jack, or by placing a header under the stringers and setting a jack

(Continued on page 46)



Why are there two elements in the BULLDOG anchor?

Listen to this conversation between a track maintenance man and a True Temper engineer.

A. No other construction permits such a tremendous amount of holding power. The two elements actually multiply and sustain the gripping power of each other.

Q. Wouldn't a single clamp, or a single spring, do as well?

A. No. Most rail anchors are simple one-piece torsion springs. They grip the rail base with horizontal force. Only the BULLDOG uses both horizontal and vertical force—a combination that increases holding power 25%.

Q. Well, how do these two elements do that?

A. One element is a spring, tempered for resilience. It

functions like ordinary anchors by gripping the rail horizontally. The second element—and here is where the BULLDOG is unique—is a double-jawed clamp of hardened steel. This is fitted to the spring to add vertical force by gripping the rail at the base.

Q. And this actually increases holding power?

A. Absolutely. Precision tests prove it. The BULLDOG's two-way grip, using both horizontal and vertical force, gives you much more holding power. And, after all, holding power is what you're buying in a rail anchor.

Q. Okay. But isn't this anchor harder to apply?

A. Not at all. It's *assembled at the factory* into one unit that's very easy to ship, handle and apply. It has all the convenience of a one-piece anchor. Track workmen like it because one man can install it easily with any striking tool—sledge or spike maul. And to make application even more economical, True Temper now offers two machines—one hydraulic, the other mechanical—that do the job almost automatically.

Q. Do other railroad men agree with you?

A. They certainly do. Over half the railroads buy the BULLDOG, and the number is increasing. It's the fastest-growing rail anchor in the business.

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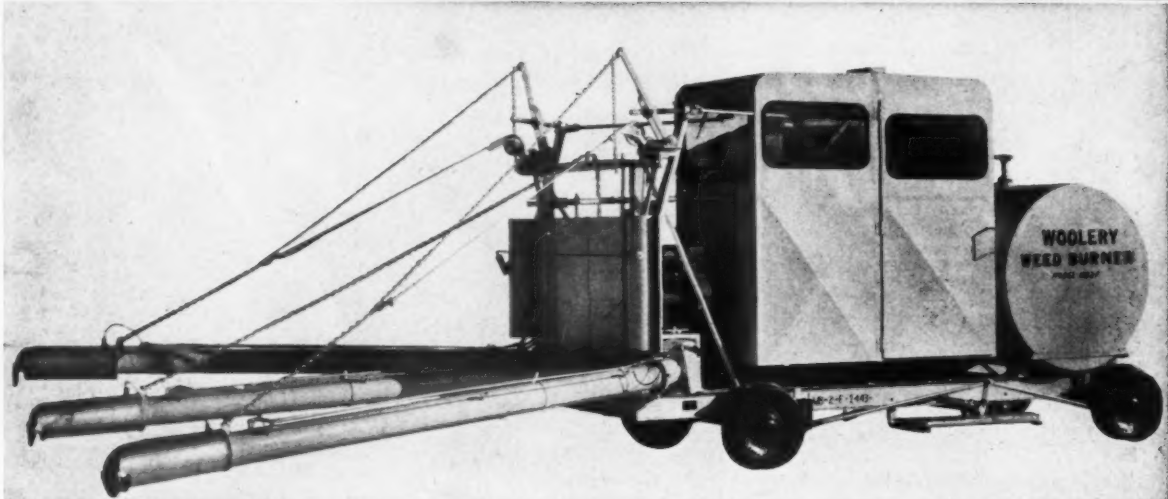
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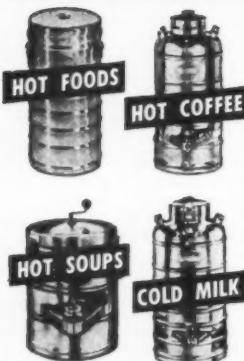
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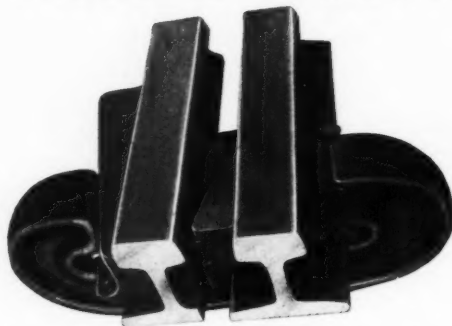
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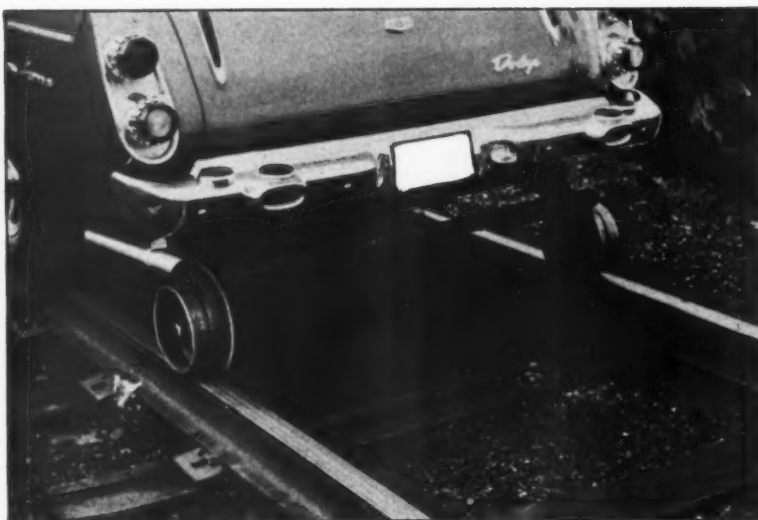
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What's the answer? (cont'd)

(Continued from page 42)

on a chain block, which is fastened to the pile. If it is a high bent, it will be necessary to hang a staging for this work.

If more than three piles per bent are badly decayed, it is time to cut off all the piles and place a frame timber bent.

No more than three

By J. G. CAMPBELL
Assistant Division Engineer
Chicago, Milwaukee, St. Paul & Pacific
Milwaukee, Wis.

It is only practicable to post a pile which has deteriorated at the ground line when you decide that the deteriorated pile is no longer as good as a stub will be.

I have never felt that more than three piles should be posted in a five pile bent. When more than three piles require stubbing, then it would be best to erect a frame bent, rather than post additional piles.

Use concrete at splice

By W. C. BORCHERT
Division Engineer
Louisiana & Arkansas
Shreveport, La.

The practicability of posting a pile deteriorated at the ground line comes under two categories: temporary and permanent.

Temporary posting is desirable in order to safely carry the bridge for a few months, or even a few years, until the general condition of the piles is such as to warrant its redriving. No more than two posts should be applied to a bent. If more than two posts are necessary in a bent, it should be framed. In temporary posting, the posts are toe-nailed to the stub piles with boat spikes. If conditions warrant, the post is also tied to the stub pile by means of metal straps or wooden scabs. The bent should, of course, be braced.

Permanent posts are warranted in cases of extreme expense, difficult driving, or when funds for redriving are not available. They permit the expense to be spread over a period of months or years. Another consid-

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What's the answer? (cont'd)

eration is the amount of penetration of the existing piles. If you have 40 ft or 50 ft of good pile below the ground line, this would be wasted if the bridge is redriven. In permanent posting, all of the piles of a bent may be posted or spliced, provided that the bents are well braced. However, I would not recommend this procedure for bridges over about 18 ft or 20 ft in height.

The splice is made by carefully cutting both the stub pile and the post. The latter consists of a new creosoted pile obtained in advance with about 12 in. in diameter tip. The post is doweled to the stub by means of a 1-in steel pin. The post and stub are strapped together by two steel straps, which are spiked to the post and stub. The straps are about $\frac{3}{8}$ in. in thickness, 2 in. in width and 15 in. in length, with a hole in each end.

By using a hand ax, two rings are grooved near the bottom of the post

and near the top of the stub pile. These grooves are about 2 in. in width and 1 in. in depth. A reinforced-concrete sleeve, the inside diameter of which is 3 in or 4 in larger than the pile to be spliced, is applied at the splice. This sleeve is centered at the splice and quick-setting grout is poured and tamped between the splice and the sleeve. The sleeves should be stocked in diameters of 16 in, 18 in, and 20 in. These sizes will generally take care of all conditions.



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By GEORGE WALKER
B&B Supervisor
Missouri Pacific
Palestine, Tex.

When two or three piling in a bent start deteriorating at the top or at the ground line and the balance of piling in the bent is good for several years, we find it practicable to post a bad pile and carry the bent until necessary to frame or redrive it.

The pile should be cut off far enough below the ground line so that the new post will be on a good solid stub. Post and stub should be held together with $\frac{3}{4}$ -in by 6-in dowels. Then anchor angles should be applied on each side of the post with $\frac{3}{4}$ -in bolts through the post and stub, or they can be strap bolted.

Not more than 50 per cent of piling in a bent should be cut out or posted, as this will cause the bent to rack.

Maximum of two piles

By A. D. ALDERSON
Engineer Bridges & Structures
Soo Line
Minneapolis, Minn.

Posting is the removal of a partially decayed or damaged pile from below the area of decay or damage to underneath the cap, and the replacement of the removed portion with a timber post approximately the same diameter as the pile.

It is practicable to post a pile when all of the remaining piles in the bent are of relatively sound timber. Usually the posting of a pile does not become necessary until the bridge is nearing the end of its economic life. Then, ground-line decay has oc-



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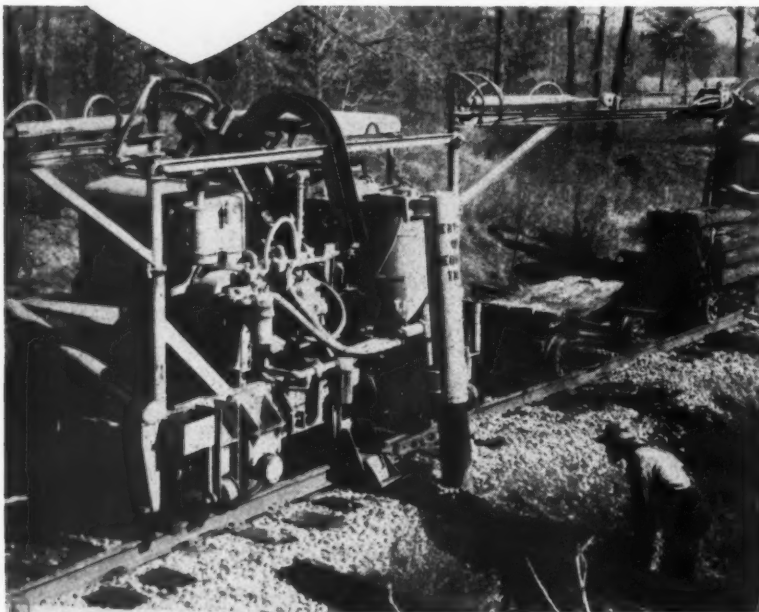
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What's the answer? (cont'd)

curred to a greater or less extent at each pile. In making his recommendations as to the piles that are to be posted, the bridge inspector must use sound judgment on the condition of the remaining piles in the bent.

Posting of a pile is done to eliminate the necessity of moving a pile driver to the bridge for redriving a few piling. It is purely an economic measure used to carry a pile bent until the bridge has reached a point in its general deterioration that redriving or the replacement of a bridge becomes necessary. In other words, it is a method that is used to carry the bridge further until its renewal is required.

The work of posting a pile consists of removing the drift bolt which fastens the top of the pile to the cap, removing all bracing attached to that portion of the pile to be removed, excavating the earth at the ground line to well below the decayed portion of the pile and sawing off the pile below the decayed area, making sure that the cut is in sound timber. It is important that the cut be made square to the longitudinal axis of the pile for providing a good seat for the post that is to be placed.

After the sawed-off portion of the decayed pile is removed from the bent, a sound post, usually a pile cut-off, is cut to the exact length and set into place. Care should be taken to obtain proper bearing underneath the cap to be certain that the new post will carry its share of the load. The bottom of the post is fastened to the existing pile by toe-nailing, and the top of the post is drift bolted to the cap in the usual manner. Any braces that were removed are then placed to assist in holding the post in line.

Generally not more than two piles should be posted in a five-pile bent, and then only if the remaining piles are in reasonably good condition. When it becomes necessary to post more piles, it is advisable to cut off the remaining piles and place a conventional frame bent, properly braced.

The number of bents in a bridge that have posted piles is also a factor in determining the number of additional piles that can be posted. The

general condition of the bridge and the kind and amount of traffic handled must be considered when recommending bents to be repaired by posting of piles.

The posting of any great number of piles in a bridge subject to high water is very undesirable, since some of the posts may be displaced by floating ice or debris.

Checking slides on high fills

What corrective measures can be taken during extended, wet, rainy periods to check surface slides on high fills? Explain.

Eliminate seepage

By P. H. CROFT
Assistant Engineer M. of W.
Illinois Central
Memphis, Tenn.

All maintenance employees have their own pet schemes for preventing or controlling slides. But all will agree that the seepage of water into the fill must be eliminated or reduced to a minimum.

Slides on fills generally occur where the fill has been constructed without any thought being given to soil mechanics. Fills of this nature are frequently made of silt, or other types of soil, making it difficult to prevent water from permeating the fill. This condition will eventually create water pockets, although their development may not be as rapid as in some types of clay.

A water pocket which has developed in a fill usually will be first noticed as a soft spot. As the water content increases the pocket will expand to a point where outward seepage may be noticed. This creates a perfect slide condition. Frequently a slide may occur before a seepage may be noticed. This is usually where there is an impervious layer on the outside of the fill.

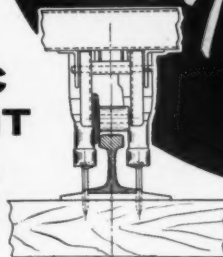
A number of methods may be used to correct or at least minimize the possibility of a slide, such as grouting, subdrainage, and deep ditching.

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SpikeMaster nips up the tie and drives four spikes—one on either side of both rails.

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Railway Maintenance Corporation

PITTSBURGH 30, PA.

What's the answer? (cont'd)

Grouting has been recognized as a very effective method of stabilizing soft spots. When used, it will minimize the possibility of water pockets. Grouting has also been extensively used, and with good results, where water pockets were known to exist.

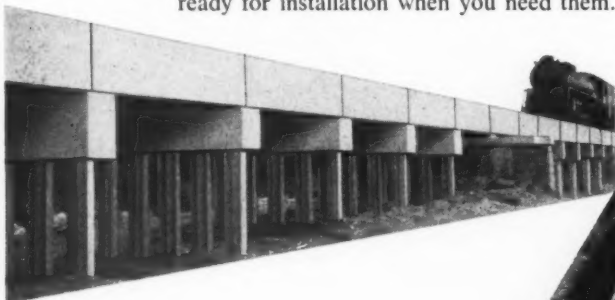
Subdrainage is possibly the best known of the modern methods and must be considered as one of the best methods of stabilizing fills. Before

subdrains are installed, test holes should be bored to determine the depth of the water pocket. A 6 or 8-in perforated pipe is then placed about 12 in below the bottom of the pocket. If the open-trench method has been used, the trench is then backfilled with a finely graded filter material. In particularly troublesome spots, and when an extraordinary amount of water may enter the trench from the top, an impervious filter or seal is tamped in the last several inches of the backfill.

Save Money...WITH THESE PRECAST CONCRETE PRODUCTS

PILING and BRIDGE SLABS

Time is money. Save it by using precast piling and bridge slabs made by American-Marietta—ready for installation when you need them.



FLAT BASE PIPE

Save up to 30% in the construction of underpasses for pedestrians and animals—with precast Flat-Base Pipe.



CRIBBING

Economy, safety and appearance are three good reasons for specifying A-M open or closed face Cribbing. Also it can be relocated easily.

Write today for illustrated folders full of money-saving ideas.



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CONCRETE PRODUCTS DIVISION

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AMERICAN-MARIETTA BUILDING
101 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS, PHONE: WHITEHALL 4-5600

The open-trench method for subdrain pipes is now being replaced by boring into the side of the fill and inserting the perforated pipe. This has been found to be more economical.

It is advisable as well as necessary to keep the fill dry. To achieve this all drainage surrounding the fill should be diverted from contact with the fill insofar as possible.

In addition to the methods explained we have found that, when trouble is experienced and corrective methods are used, it is advisable to put a coating of limestone or slag screenings over the top of the fill to prevent water from seeping into the embankment.

Repair parts for M/W equipment

What yardsticks should be used for determining the stocking of repair parts for powered M/W equipment? Explain.

Requires judgment

By SUPERINTENDENT OF WORK EQUIPMENT

It is difficult to set up a "yardstick" for stocking M/W machine repair parts. The record you keep of various machines will keep you informed as to what parts are prone to failure or to wearing out rapidly. This does not mean, however, that you should keep all such items in stock. You have some control over the time such parts will be needed, that is, whether it is needed for overhaul work or summer maintenance.

The record of parts failures is particularly advantageous for ordering new items needed for machine overhaul. Since we do this work during the winter, we order such parts in late fall just before the machines are brought in to our central equipment repair shop. We order just what we think we need, and no more. There is no sense in carrying parts that won't be needed until next year's overhaul. Blades for ballast tamping machines are a case in point.

(Continued on page 56)

In The Yard... OR On The Line **BURRO**

WORK POWER PAYS!

When a BURRO goes to work — in the yard or on the line — it delivers fast, low cost performance. Equipped with bucket, magnet, hook, tongs or dragline bucket, a BURRO is ready and able to do the hundreds of odd jobs railroad work calls for. Fast travel speeds (up to 22 mph.) and heavy draw bar pull enable the BURRO to move itself and a work train or cars to the job in a hurry. Once on the job, a BURRO wastes no time getting the work done. BURRO's work power pays dividends every day it operates.

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the improved **GAUTIER**

the finest in **RAIL ANCHORS**

**STRENGTH
DURABILITY
ECONOMY**

Made of Alloy Spring steel, the Improved Gautier is one of the heaviest and most rugged rail anchors on the market.



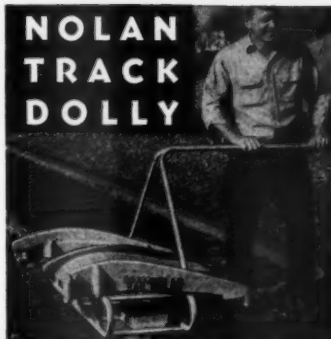
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NOLAN TRACK DOLLY



... the fast,
safe, easy
way to
transport
materials

You can get rails, ties, supplies, tools, rerailers, etc., to the job with money-saving speed and efficiency, when you equip your crews with the Nolan Track Dolly.

Built of tubular high-carbon steel. Extremely strong and serviceable. Operator's handle conveniently placed to assure correct balance and full control of heavy loads. Ball bearing cast steel wheels. Convenient spike securely holds dolly in loading position. Deck is heavy mesh expanded steel.

STANDARD DOLLY

Length	Width	Ht. Above Rail	Weight
50½ in.	15½ in.	6½ in.	88 lbs.

INSPECTOR'S DOLLY

Length	Width	Ht. Above Rail	Weight
36 in.	14 in.	6 in.	60 lbs.



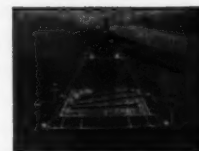
NOLAN TOOL AND SUPPLY CAR

2000 lbs. capacity. All-tubular high-carbon steel construction for safe carrying of ties, rails, supplies, etc. Car breaks conveniently in center into two sections for easy handling and transportation. Deck is heavy mesh expanded steel.

Platform size 48" x 45" Ht. above rail 8"
Weight 140 lbs. complete.

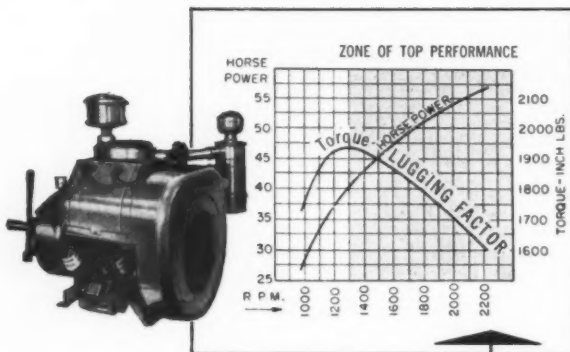
Write for complete railway supply catalog.

THE NOLAN COMPANY



166 PENNSYLVANIA ST.,
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Judge your power unit by its LUGGING FACTOR



Model VR4D 56 hp

WISCONSIN

heavy duty Air-Cooled

ENGINE POWER CURVE

When the power load suddenly *builds up* and the engine speed *slows down* . . . how long will the engine *hang on* and carry the increased load without stalling?

The answer lies in the **HIGH TORQUE LUGGING FACTOR** which is an integral part of "Wisconsin" basic engineering. The point at which an engine will stall under suddenly increased loads is the *High Point* in the **TORQUE CURVE**. As a case in point, analyze the Wisconsin Model VR4D power curves reproduced here.

This engine develops its maximum horsepower (56 hp.) at 2200 rpm. at which point it registers a torque of 1600 inch-lbs. The engine runs into heavy going. The load builds up fast. The rpm. slows down to 2000, 1800, 1600 and 1400 rpm., reaching its maximum torque at the low speed of 1300 rpm.

In terms of power service to the user, this simply means that your Wisconsin Engine is designed to provide dependable load-holding power at low engine speeds. This, in turn, means fewer shutdowns, less wear and tear, more usable power and more versatile performance for your dollar investment.

These are reasons why it pays to specify "Wisconsin Power" for your equipment. For a briefing on the full line, write for Engine Bulletin S-223.



STATEMENT REQUIRED BY THE ACT OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946, (Title 39, United States Code, Section 233) SHOWING THE OWNERSHIP, MANAGEMENT AND CIRCULATION

Of Railway Track and Structures published monthly at Newark, New Jersey, for November, 1958

1. The names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Robert G. Lewis, 30 Church St., New York 7, N.Y.; Editor, Merwin H. Dick, 79 W. Monroe St., Chicago 3, Ill.; Associate Editor, Radford E. Dove, 79 W. Monroe St., Chicago 3, Ill.

2. The owners are: Simmons-Boardman Publishing Corp., 30 Church St., New York 7, N.Y. Stockholders of one per cent or more, James G. and Louise Lyne, 30 Church St., New York 7, N.Y., Arthur J. McGinnis, 30 Church St., New York 7, N.Y., Frederick A. and Artimese B. Clark, 30 Church St., New York 7, N.Y., Joseph or Katherine Sanders, 2909 Maple Ave., Dallas 4, Texas, John R. Thompson and Kathe Thompson, 79 West Monroe St., Chicago 3, Ill., Ruth Wheaton Johnson, 1615 Ravenna Blvd., Seattle 5, Wash., William E. Russell as Trustee L/W/T of Ida R. Simmons F/B/O, Mrs. E. S. Fenton, c/o Russell & Russell, 41 East 42nd St., New York 17, N.Y., J. Streicher & Co., 2 Rector St., New York, N.Y., Partners of J. Streicher & Co. are: Joseph Streicher, Jack L. Streicher, Ethel Streicher, Judson Streicher, all of 2 Rector St., New York, N.Y., Morton & Co., c/o Marine Midland Trust Co., 120 Broadway, New York 15, N.Y.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

MERWIN H. DICK, Editor

Sworn to and subscribed before me this 23rd day of September, 1958.

(Seal) WILLIAM L. HALL, JR.
(My commission expires February 12, 1961)

2 WAYS to simplify track maintenance:



Koehring 205 powers its own rail car . . . loads, unloads itself in 10 min. . . . works on or off-track

Wherever there's excavating, lifting or material-handling to be done, Koehring® RailAid® takes to the rails — travels on-track from one work-section to the next at speeds up to 20 m.p.h. It's self-propelled — does 2 to 3 times the work of other excavators or cranes that have to crawl or be hauled from job to job.

At the same time, you get full flexibility for working on or off-track because RailAid combines all the advantages of a self-propelled track crane with the versatility of a standard crawler crane or excavator. It loads or unloads itself on ramp-equipped car in less than 10 minutes. Crane or excavator sets car on and off-track — clears the right-of-way for normal through traffic. Work is uninterrupted for the complete shift. Propulsion car has 2-axle drive, with airbrakes on all 4 wheels. Torque converter gives smooth control of 20 m.p.h. travel speed. Wide car-well accommodates 16, 20 or 24-inch crawlers on excavator or crane. As a crane, Koehring RailAid safely lifts up to 6.9 tons from the car — 8.9 tons on ground. Converts to clamshell, dragline, ½-yard shovel or hoe — cleans ditches, widens banks, stock-piles coal or ballast, loads or unloads cars, repairs trestles, lays rails, does pile-driving. Want more facts? See your Koehring distributor or write today.



Koehring® Mud-Jack® stabilizes track-bed, leaves firm sub-grade, no interruption to rail traffic

Here's a labor-saving way to get better conditioned track, and reduce "slow orders". Koehring Mud-Jack corrects pockets in ballast and sub-grades without interrupting rail traffic. Injection points are driven into the lower ballast. Mud-Jack pumps a soil-cement slurry into weakened area — displaces air, water and water-saturated material — leaves firm *permanent* sub-grade. High fills, as well as shallow grades, are treated by the Mud-Jack method. Slurry can be forced 70 feet deep or more, to stabilize fills at trestle ends. Production capacity: Pumps 200 cubic feet of slurry per hour at pressure of 400 PSI. Read all about it in the new Mud-Jack catalog.

Mail to: KOEHRING Division of Koehring Co., Milwaukee 16, Wisconsin

Please send latest catalogs on: ☐ Mud-Jack ☐ RailAid

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CITY, STATE.....

K837 RTS

RailAid



Mud-Jack

What's the answer? (cont'd)

(Continued from page 52)

We have a pretty good idea as to the number of blades we can reclaim and those we will have to replace.

Now, tips for tamper blades are another thing. We usually ship three replacement tips out with each machine. These we can stock at our central repair shop and, as the tips are used in the field, we can ship replacement tips to the machine. This

is summer usage so we can order our supply of these just before we are to ship out our equipment.

The type of machine on which parts are to be used also makes a difference. Earthmoving machines, for instance, usually are purchased from manufacturers having branch offices distributed around the country. There is no sense in stocking parts for such machines because you can usually obtain such parts much quicker from these branch offices than you can from the stores at your

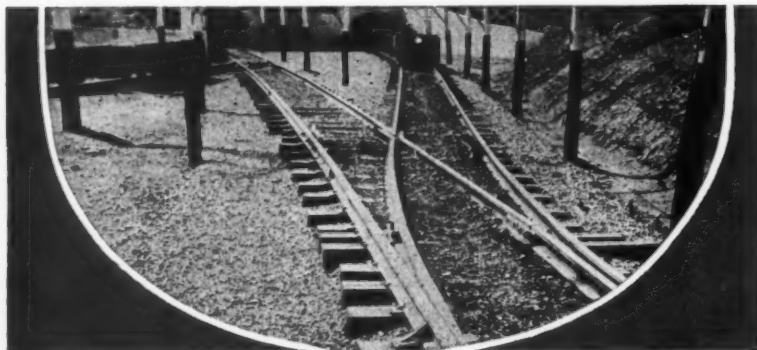
central repair shop. The parts cannot be shipped via railroad baggage anymore and must go either by express or parcel post. So, even if you don't have a manufacturer's branch office nearby, the chances are you can get your part as fast, if not much faster, by ordering direct from the manufacturer. Some parts, such as piston rings and valves, we permit our mechanics to order and pick up locally from the manufacturer's branch or a garage. However, for the more expensive parts we usually require them to procure a purchase order so we can keep control of these repairs.

We try to keep a happy medium on the stocking of parts, and this requires good judgment.

By manufacturer

By M. E. KERNS
Superintendent Maintenance Equipment
New York Central System
Jackson, Mich.

I am of the firm opinion the manufacturer of the powered M/W work equipment should stock the repair parts. These parts should not be stocked on each individual railroad. Such a procedure would be too costly.



time means more...



with Republic Creosoted Wood

In the language of time, Republic Pressure Creosoted Wood speaks for itself.

**FROM Railroad Ties, Cross Arms, Lumber
TO Poles, Wood Blocks, Piles and Anchor Logs**

Dependable, resistant to insects and fungi, in acid or alkaline soils.
Economically, a sound investment.

REPUBLIC CREOSOTING COMPANY

MERCHANTS BANK BUILDING • INDIANAPOLIS

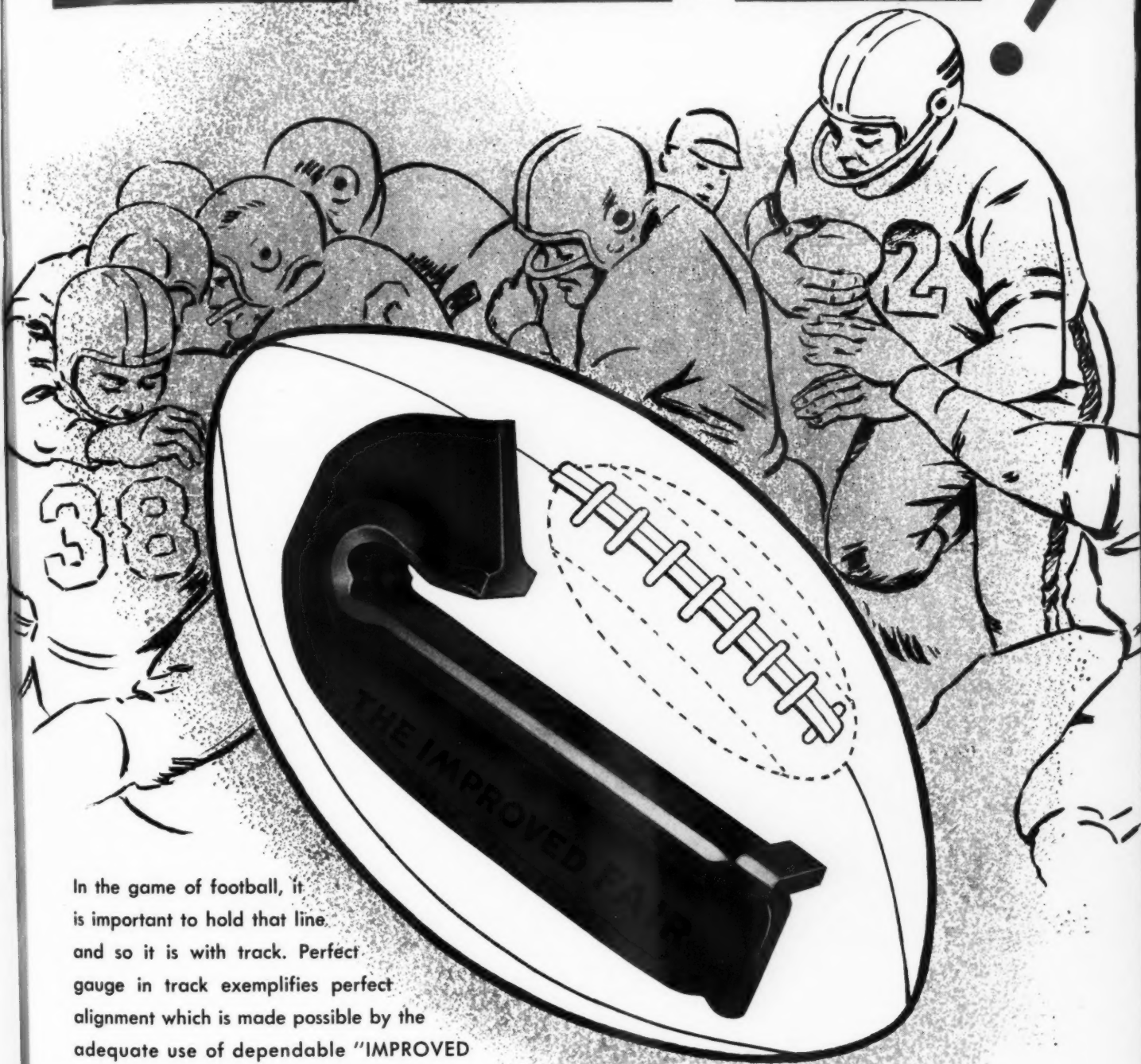
Biographical briefs (cont'd)

(Continued from page 10)

and in 1940 he was made supervisor of bridges and buildings. After five years in this position, Mr. Spofford was promoted to assistant division engineer, and in 1952 he was appointed assistant to the chief engineer. In 1954 he was made engineer maintenance of way and in 1955 he was promoted to assistant chief engineer, the position he was holding at the time of his recent promotion. Mr. Spofford is a graduate (1927) of Tufts College with a Bachelor of Science degree, civil and structural. He is a past president of the American Railway Bridge & Building Association.

Herbert D. Minnis, Jr., 37, who was recently promoted to division engineer at Selma, Ala., on the Southern (RT&S, Sept., p. 10), was born at Charlotte, N. C., and received his higher education at Clemson College. He entered the service of the Southern in March 1947 as a rodman at Charlotte. From June 1947 to December 1950 he served as a student apprentice and assistant track supervisor at Mooresville, N. C., Winston-Salem and Charlotte. At this time he was appointed track supervisor at Orangeburg, S. C., being transferred to Spartanburg in 1951. In June 1957 he was promoted to assistant division engineer at Birmingham, Ala. He was serving in this capacity at Hattiesburg, Miss. at the time of his recent promotion.

HOLD THAT LINE!



In the game of football, it is important to hold that line, and so it is with track. Perfect gauge in track exemplifies perfect alignment which is made possible by the adequate use of dependable "IMPROVED FAIR" rail anchors. The "IMPROVED FAIR" rail anchor does hold that line.

THE P. & M. CO.

Division of Poor and Company

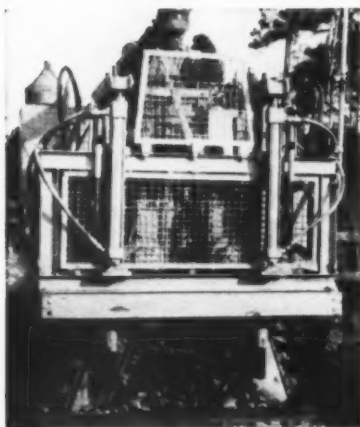
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Dependable Aeroquip Hose Lines Selected for Maintenance Equipment

Seaboard Air Line Railroad Mechanizes the Gandy Dancer



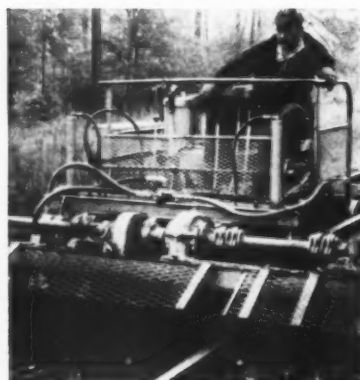
Aeroquip Hose Lines have the rugged dependability needed for long service on hydraulic maintenance equipment. And when replacement lines are needed, Aeroquip Hose and Reusable Fittings are field assembled quickly, right on the job. Downtime is held to a minimum and replacement costs are reduced.



Seaboard Air Line developed this mechanical ballast remover. Aeroquip Hose Lines on front hydraulic cylinders withstand vibration, flexing and abrasion.



Ties are cut and spikes pulled hydraulically by this portable machine. Aeroquip High Pressure Hydraulic Hose Lines give long, trouble-free service for Seaboard.



This bed scarifier is another of Seaboard's mechanized units with dependable Aeroquip Hose Lines. Tie pullers, ballast tampers and power jacks also use Aeroquip Hose Lines.



Seaboard Air Line Railroad maintenance men designed these set-offs for easy handling of maintenance equipment removed from the tracks.

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Association News

Northwest Maintenance of Way Club

At the next meeting of the club, to be held on November 20, the principal speaker will be M. J. Galvin, public relations counsel for the railroads in Minnesota. His subject will be, "What's Wrong with the Railroads." The program will also include the showing of a moving picture depicting competitive forms of transportation in the State of Minnesota. This meeting will be held, as usual, at the Midway Civic Club, 1931 University Avenue, St. Paul, Minn.

American Railway Engineering Association

As reported in the October issue, the Nominating committee met at Chicago on September 15 and nominated a slate of officers to be elected at the convention next March. The directors (four to be elected) are:

W. E. Cornell, engineer of track, Nickel Plate, Cleveland; W. J. Cruse, engineer maintenance of way, Great Northern, St. Paul; F. L. Etchison, chief engineer, Western Maryland, Baltimore; C. R. Riley, chief engineer, Baltimore & Ohio, Baltimore; D. E. Rudisill, assistant chief engineer—maintenance, Pennsylvania, Philadelphia; H. B. Christianson, Jr., assistant chief engineer, Rock Island, Chicago; V. C. Hanna, chief engineer, Terminal Railroad Association of St. Louis, St. Louis; L. V. Johnson, general manager, Soo Line, Minneapolis.

Members of the Nominating committee (five to be elected) are:

C. L. Towle, chief engineer, Detroit, Toledo & Ironton, Dearborn, Mich.; E. A. McLeod, assistant engineer, New York Central, New York; C. Neufeld, engineer of bridges, Canadian Pacific, Montreal; J. E. Eisemann, district engineer, Atchison, Topeka & Santa Fe, Amarillo, Tex.; W. D. Kirkpatrick, assistant to chief engineer, Missouri Pacific, St. Louis, Mo.; P. D. Brentlinger, forester, Pennsylvania, Philadelphia; C. I. Hartsell, division engineer, Chesapeake & Ohio, Saginaw, Mich.; C. E. Weller, division engineer, Illinois Central, Waterloo, Iowa; F. J. Corporon, superintendent way & structures, Chicago, South Shore & South Bend, Michigan City, Ind.; L. S. Crane, mechanical research engineer, Southern, Washington, D. C.

As reported in October, F. R. Woolford, chief engineer, Western Pacific, and now senior vice-president of the association, was nominated as president. R. H. Beeder, assistant chief engineer, system, Santa Fe, was nominated to the position of junior vice-president. E. J. Brown, chief engineer, Burlington Lines, now junior vice-president of the association, will automatically be advanced to senior vice-president.

Reduce Rail Maintenance Costs with RTW Grinders and Drills

The Model P-22 Portable Flexible Shaft Grinder

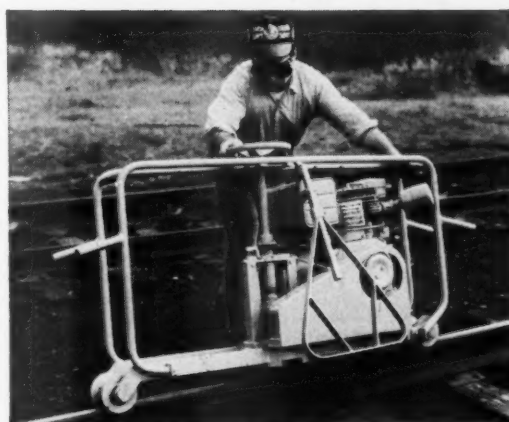
The Model P-22 Portable Flexible Shaft Grinder speeds the free hand finishing of surface welds on rail ends, crossings, frogs, flange ways, switch points and stock rails. This grinder is mounted on a one wheel carriage for easy transporting. A 6 hp air-cooled gasoline engine drives a counter shaft to which a flexible shaft is coupled. The engine is mounted on a ball bearing swivel plate which permits the maximum free movement in handling the flexible shaft which transmits the power to the grinding wheels. The speed of the grinding wheels can be regulated by a governor adjustment on the engine, so as not to exceed maximum speed of 9,500 surface feet per minute permitted under the safety code for high speed grinding wheels.



MODEL P-22

Model P-45-A Portable Rail Surface Grinder

Model P-45-A Portable Rail Surface Grinder is an easily portable one-man Cup Wheel Grinder. It is modern and has been designed for greater durability and accuracy in grinding welded rail ends, removing mill tolerance and scale ahead of heat treatment of rail ends. This grinder will give a very smooth highly polished surface. The Model P-45-A is powered by a 3½ hp air-cooled gasoline engine with a V-Belt drive that acts as an overload release to prevent damage to other moving parts. An attachment is provided for tightening the V-Belt. A screw in a vertical slide frame equipped with bronze gibs permits take-up adjustment to compensate for wear and gives accurate adjustment to the Cup Wheel.



MODEL P-45-A

The Model P-43 Power Track Drill

The Model P-43 Power Track Drill embodies many features to help to speed rail maintenance at reduced cost. It is powered by a 1½ hp air-cooled gasoline engine. The V-Belt drive acts as an overload release in the event the drill bit becomes cramped or sticks during operation. There are quick and simple adjustments for leveling the drill both on the top of the rail head, and supporting screws insure perfect alignment when drilling through angle bars or for bare rails. In case a bit binds and causes the motor to stall before a hole is completed, a stop on the rail head bracket permits the backing out of the bit. Positive, easily controlled screw for feeding bit. A telescopic extension in the rail head bracket facilitates drilling around switches. Openings up to 13" fully extended, permits drilling at the heel of switches and other locations around switches, the drilling of rails and guards in position. An outrigger attachment can be supplied if it is desired to use this machine on the track. It is quickly attached or detached for on or off-track operation. A knurled appliance between the handles of the outrigger provides a means for leveling the machine to compensate for various weights of rail.



MODEL P-43

Write today for complete information covering the equipment described above or on any of the equipment listed below.

TRACK MAINTENANCE MACHINERY

Switch Grinders • Cross Grinders • Surface Grinders • Rail Drills • Cross Cutters • Bit Sharpeners • Tie Nippers • Grinding Wheels • Tie Handlers • Track Liners

Railway Trackwork Co.

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ELECTRIC PLANTS
**ELECTRIC PLANT
NEWS**



3,000 watts

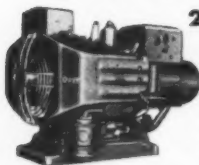
New Onan all-purpose Diesel Electric Plant cuts costs in half!

Lower fuel cost, less maintenance, longer life, cut power generation costs with the Onan 3DSL to half that of small gasoline-powered electric plants! For applications requiring an almost continuous supply of electric power, this new unit gives you unmatched economy and season after season of service.

Lighter weight and compact

The new 3DSL is powered by an Onan single-cylinder, air-cooled full-Diesel engine. Available in all standard A.C. voltages and as a 32-volt battery charger. Vacu-Flo cooling, permitting enclosed installations, is standard. The 3DSL has a new mounted muffler, more efficient dry-type air filter, new geared crank, and it's hooded for protection on the job. Smoother running, lighter weight, and compact.

New lower price makes it an even bigger value . . . allows you to "go Diesel" for more power generation needs.



2-cylinder, 5KW ONAN DIESEL

SERIES SDRP. Air-cooled horizontally-opposed, smooth-running full Diesel engine. All standard voltages available. A higher capacity unit for continuous, low-cost operation.

Onan A.C. gasoline-powered plants: Air-cooled—500 to 10,000 watts. Water-cooled—10 to 150 KW.

See your Onan distributor
or write for information

D. W. ONAN & SONS INC.

3716A University Avenue S. E.
Minneapolis 14, Minnesota

Supply Trade News

KOEHRING COMPANY—Ernest L. Pierce, Jr., erection supervisor for Koehring Southern at Chattanooga, Tenn., has been promoted to service manager, succeeding Charles Lewis, deceased.

LE TOURNEAU-WESTINGHOUSE — Jack Rhodes has been named to the post of eastern credit manager for this company, succeeding Donald E. Seghi, who has been transferred to a special assignment in the company's credit department. Mr. Rhodes will have charge of credit department functions in 21 eastern states and four Canadian provinces.

MID-WEST FORGING—William A. Maxwell has entered the service of this company as a special representative and will devote himself to the sale of the Improved Gautier Rail Anchor, according to an announcement by Ray T. Johnson, Jr., executive vice-president. Mr. Maxwell entered the service of the P&M Co. in 1917 as an inspector in the sales department. He was appointed general sales manager of this company in 1931. In 1945 he resigned to accept a position with Ramapo-Ajax (now part of the Railroad Products Division of American Brake Shoe Company). He retired from the service of this company on July 1, 1958. Mr. Maxwell is a past president of the Track Supply Association.

SPERRY RAIL SERVICE—L. C. Morris, assistant sales manager, has been promoted to railroad sales manager, succeeding S. A. Thompson, who has resigned as noted elsewhere.

THOMSON-MANNING CORP.—S. A. Thompson, sales manager for Sperry Rail Service, has resigned to become a director and vice-president of Thomson-Manning, with headquarters at Lynn, Mass. The new corporation will offer rail welding service and other railroad products.

TRUE TEMPER CORPORATION—J. J. Nolan has been appointed western sales manager for this company's Railway Appliance Division, according to an announcement by R. J. Whalen, sales manager of the division. Mr. Nolan, who will have headquarters in the Chicago area, will continue to handle his accounts in the southwestern territory in addition to the Chicago accounts. His appointment was effective October 15.



W. A. Maxwell
Mid-West Forging



S. A. Thompson
Thomson-Manning

Sperry Rail Service observing 30th anniversary

The 30th anniversary of the Sperry induction car system of detecting internal flaws in rail in track is being observed by Sperry Rail Service during November. The first detector car of this type was placed in service in 1928. The apparatus incorporated in it for detecting internal flaws in rail was developed by the late Dr. Elmer A. Sperry after five years of research instituted at the request of the American Railway Engineering Association. The primary purpose was to locate transverse fissures so that the defective rails could be removed from track before failure.

The company now operates a fleet of 16 detector cars over railroads in the United States, Canada and Mexico. As of September 30, 1958, a total of 3,407,507 miles of rail had been tested for defects by these cars. As a result of their operation, 1,635,945 rails were removed from track because of defects located in them.

A special 30th Anniversary Issue of the company's house organ, The Sperry Review, has been prepared. It contains historical data on rail testing and other information appropriate to the occasion. Interested readers may obtain copies by writing to Sperry Rail Service, Division of Sperry Products, Inc., Danbury, Conn.

JOB PROVEN GROUTING EQUIPMENT (COMPLETE PLANT) FOR RENT or SALE

"We can supply all equipment and services for any type grouting job."

- MIXING EQUIPMENT
- PUMPS
- SPECIAL ACCESSORIES
- MATERIALS

Our Complete Service & Experience
MAKES THE DIFFERENCE!

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NEW! RACOR® DUAL SPIKE SETTER



Pays for itself in less than five months!

Because it saves from three to seven men in the average rail gang, the new Racor Dual Spike Setter can pay for itself in 2½ to 5 months of operation. In addition, this efficient spike setter speeds up the actual spike driving operation, reduces clean-up operations to a minimum, and produces better track through uniformly set spikes which go down straight.

Produced after a long series of field tests in cooperation with leading railroads, the Racor Dual Spike Setter is a self-contained, pneumatically operated piece of track maintenance equipment. Power is supplied by a gasoline engine driven air compressor, furnished as an integral part of the machine. It is manufactured to the same high standards of materials and workmanship as the Racor Dual Driver, which has established a record of low down-time and low maintenance cost.

Instead of the four to eight men usually required to set spikes, only one or two men are needed to position spikes ahead of the Racor Dual Spike Setter. If *your* road could use savings like this, it will pay you to get full details promptly from your American Brake Shoe representative.

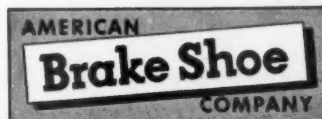


Here's how spikes should be set! The Racor Dual Spike Setter leaves them straight, true, even—just right for fast, efficient driving.

How It Works

The Racor Dual Spike Setter can be used with any spike driving equipment—pneumatic hammers, mechanical drivers, or Racor Dual Drivers. Spikes are placed by hand in the tie plate holes, leaning against the rail. The Racor Dual Spike Setter then aligns each pair vertically and sets them with a single powerful blow from an air hammer. The operator easily moves the machine along the track with one hand and triggers the mechanism with the other.

'A-2002—Rev. 1



RAILROAD PRODUCTS DIVISION
530 Fifth Avenue • New York 36, N. Y.



Along the main lines of a railroad in Indiana, this H-5 Hydorrailer uses the telescoping boom and precision control to spot a signal tower on its foundation.

A SECTION GANG IN ITSELF . . .

M/W's new *Johnny-on-the-spot* BUCYRUS-ERIE H-5 HYDRORAILER

Maintenance-of-Way has a new helping hand all down the line — Bucyrus-Erie's new 12-ton, 1/2-yd. H-5 Hydorrailer. On rails, this *all-hydraulic* machine handles dozens of jobs — laying track, installing traffic control equipment, building or maintaining bridges, etc. — along spur lines and main lines, at depots and yards. Off rail, the H-5 Hydorrailer is a *Johnny-on-the-spot* around docks, scrap yards, stations, materials storage dumps.

MONEY-MAKING FEATURES

Here are typical H-5 Hydorrailer features that can make your M/W jobs easier the year-round.

One-Man Operation on and off rails.

Telescoping Boom reaches in and out, over and under, swings left and right.

Fast Between-Job Travel up to 50 mph on open highways. On rails travel speed (same in either direction) is limited by safety considerations.

Year-Round Performance with quick, easy front-end conversions and a wide variety of attachments.

Your Bucyrus-Erie distributor wants to show you all the money-making advantages of the new H-5 Hydorrailer — the field-proved Bucyrus-Erie Hydrocrane that's taken to the rails.

285H58



SOUTH MILWAUKEE, WISCONSIN

Over 50% of Hydrocranes sold last year were repeat sales

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ON THE GREAT NORTHERN



D7 CUTS A HILL DOWN TO SIZE ON CURVE 341

Curve 341 is just east of Trego, Montana, on Great Northern Railway's Kalispell Division. Beside the curve, where a siding parallels the main line, stands a small hill.

Drainage from the hill soaked under the railroad grade, causing softening in the spring and frost-heaving in winter. Correcting this by cutting back 25 to 35 feet for a 500-foot stretch was a job for one of the Division's four Cat D7 Tractors.

The D7 used a No. 7A Bulldozer and ripper on the boulder-laden silt—toughest material the operator says he's ever dozed. Cutting jobs down to size is work made to order for the powerful D7. Its rugged Cat Diesel Engine delivers 128 HP at the fly-

wheel. The exclusive oil clutch seldom needs adjusting. Track shoes are "water quenched" for long life. On mainline or siding, the D7 is more than a match for the jobs any railway gives it.

Your Caterpillar Dealer has a complete line of versatile, high-production machines to cut your earthmoving costs. He'll cut your capital investment by stocking a complete inventory of the parts you need. Call him today for a demonstration on one of *your* jobs that needs to be done quickly at low cost.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

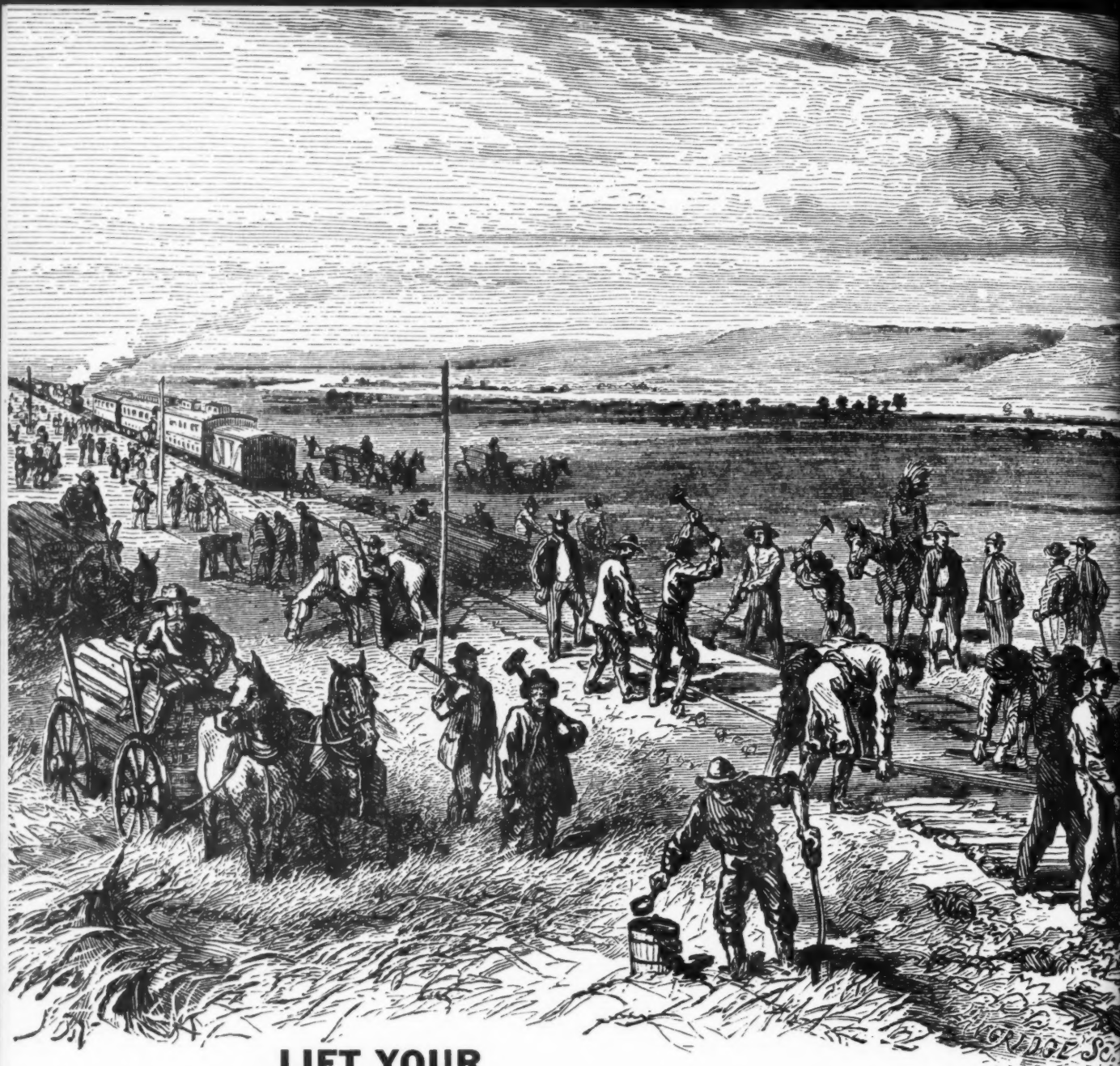
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**CUT OFF-TRACK
COSTS WITH A D7**



LIFT YOUR LUBRICATION METHODS OUT OF THE GANDY DANCERS' PERIOD

In the old days, an oil can and a grease bucket were all the lubrication you needed on the right-of-way.

But today's complex maintenance-of-way equipment needs specialized lubricants and modern lubrication methods to operate with top efficiency—and economy.

This is where the fully qualified Texaco Railroad Lubrication Engineer can help you—by recommending the right lubricants for your equipment and helping you set up the proper application procedure. He will streamline your lubrication needs, thereby reducing inventory and lowering maintenance costs. And this Texaco systematic engineering service is available in all 48 States.

For fast, expert assistance with all your lubrication problems, just call or write your nearest Texaco Railway

Sales Office. There's one in New York, Chicago, San Francisco, St. Paul, St. Louis and Atlanta.

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